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ABSTRACT

This grade 3 interdisciplinary resource unit uses Evansville, Indiana and the Ohio River as its focus for social studies, language arts, mathematics, and science lessons. Text, pictures, and maps are provided to teach social studies lessons in history, geography, and map skills, and the student exercises include tests on vocabulary words and map reading. The language arts unit includes exercises on sentence structure, writing skills, and essay composition, while story problems and graph reading provide the student exercises in the mathematics unit. The unit on science uses text to teach students about water, pollution, and the food chain. Student activities include field trips and experiments using water. Answers are not provided for the student exercises. (DJC)

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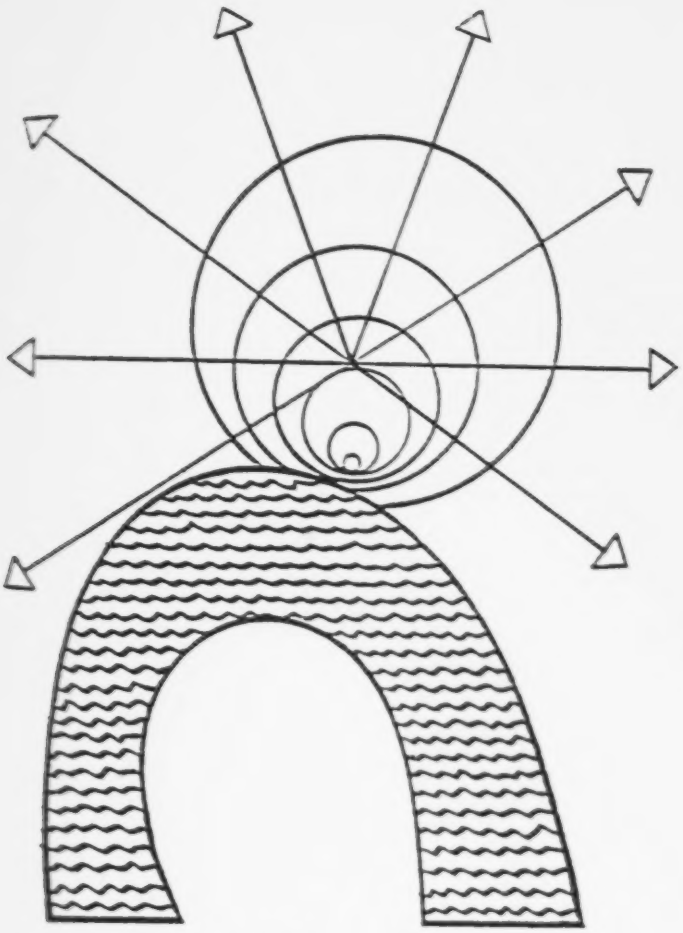

EVANSVILLE:

City on the Ohio River

An Interdisciplinary Unit

Language Arts
Mathematics
Science
Social Studies

1987

EVSC
EVANSVILLE-VANDERBURGH
School Corporation
EVANSVILLE, INDIANA 47708

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EVANSVILLE: A CITY ON THE OHIO RIVER

For Grade 3

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EVANSVILLE-VANDERBURGH SCHOOL CORPORATION
Evansville, Indiana

1987

ACKNOWLEDGMENT 1

LET'S CELEBRATE SOCIAL STUDIES! 2

LET'S CELEBRATE LANGUAGE ARTS! 74

LET'S CELEBRATE MATHEMATICS! 82

LET'S CELEBRATE SCIENCE! 92

ACKNOWLEDGMENT

The interdisciplinary unit "Evansville: A City on the Ohio River" grew out of a discussion among the Supervisors of Language Arts, Edmund Sullivan; Math, Kim Brown; Science, Bettye Lou Jerrel; and Social Studies, Chris Settle.

Recognizing the need for third-grade level interdisciplinary materials about Evansville and the Ohio River and the 175th celebration of Evansville, the Supervisors contacted four Evansville-Vanderburgh School Corporation teachers who developed the following curriculum units.

Vicki Jaquess, Dexter; Jane Koch, Highland; Anna Muriel Pitts, Harper; and Rich Winiger, Tekoppel wrote the Math, the Science, the Social Studies, and Language Arts sections respectively. The supervisors assisted these teachers in defining topics, securing appropriate resources and editing.

The Evansville-Vanderburgh School Corporation appreciates the efforts of these teachers in making Evansville and the Ohio River a subject that third grade students can readily study and enjoy learning about.

LET'S CELEBRATE SOCIAL STUDIES!

During the Ice Age, much of Indiana was at one time or another under a 2,000 feet thick layer of ice. Geologists say that there were at least three ice invasions into Indiana. The ice at one time extended south of the Ohio River. However, no ice covered the area on which Evansville was later located. After each invasion came a warming trend that lasted many thousands of years. The glaciers receded and plants and animals began to flourish. The most striking effect of the glaciers was the channeling of the Ohio River bed by the melting ice.

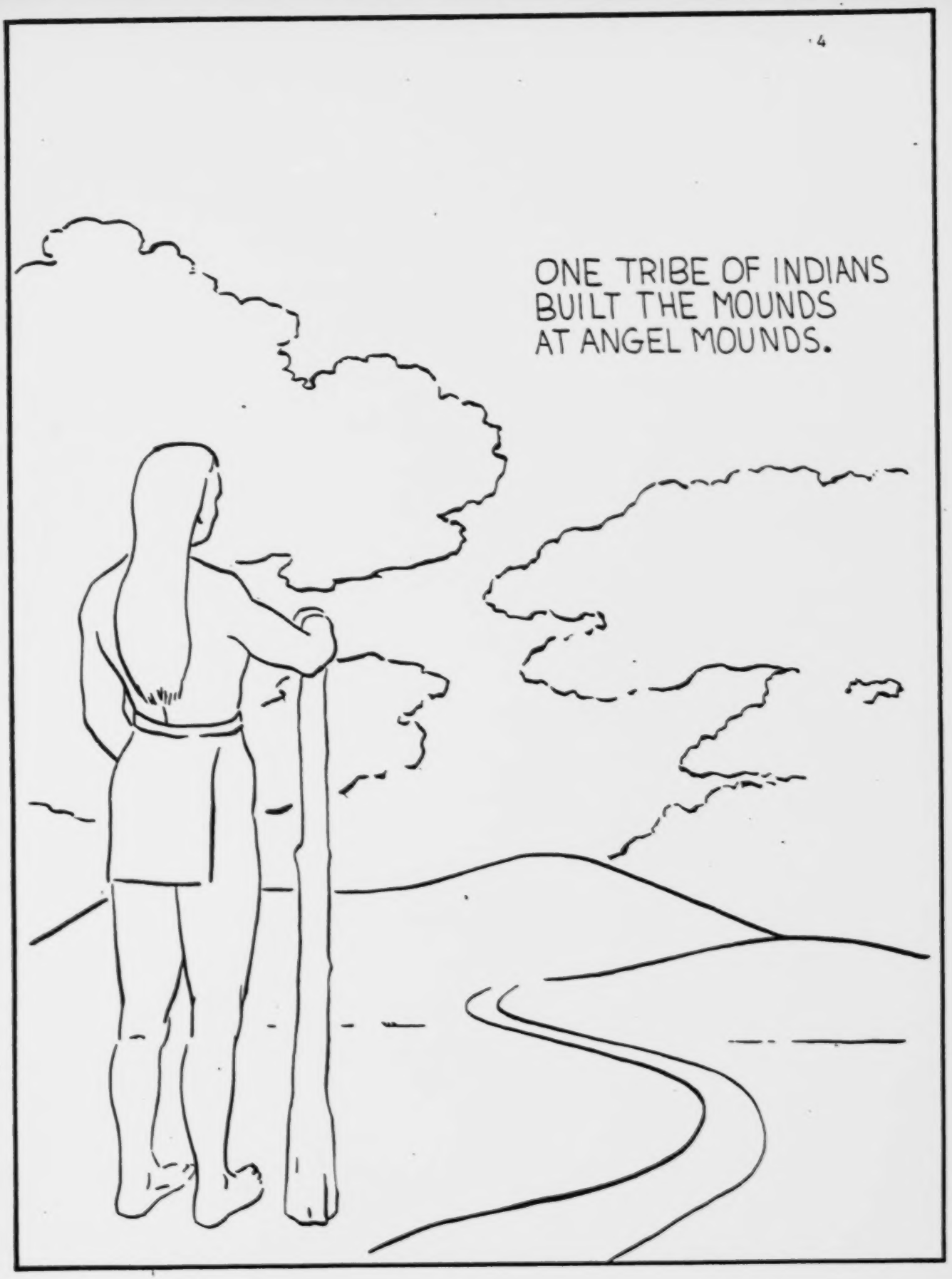
The Ohio River was first seen by a European, Robert de La Salle, in 1669. Before then, only Indians like the Mound Builders, Shawnee and Iroquois lived along its shores.

Traders used the river in the 1700's, and the settlers arrived after the Northwest Territory was established in 1787 by the United States Government.

The Northwest Ordinance outlined how government was to develop in the area known as the Northwest Territory. Indiana was one of the states created out of the Northwest Territory.

The bicentennial of the Northwest Ordinance of 1787 is 1987.

3
INDIANS WERE
THE FIRST PEOPLE
IN THE AREA.


ONE TRIBE OF INDIANS
BUILT THE MOUNDS
AT ANGEL MOUNDS.

These Indians, and the early settlers, saw forests of beech, hickory, oak, poplar and sycamore trees along the Ohio River Valley. The persimmon trees, the black gum and southern cypress trees are found only in these areas also. Wild animals, such as chipmunks, muskrats, foxes, white tailed deer, and raccoons, were abundant and from the river they found bass, catfish, and trout.

IN THE EARLY DAYS OF AMERICA, WHITE PEOPLE BEGAN TO VISIT AND TRADE WITH THE INDIANS.

Taken from: The Northwest Ordinance and Constitutional Development in Indiana--A paper presented by Dr. James Madison of Indiana University

NORTHWEST ORDINANCE

Shaded area of the map the Northwest Territory

LESSONS ON THE NORTHWEST ORDINANCE*

LESSON 2: WHAT IS THE NORTHWEST ORDINANCE?

In 1787, the Congress of the United States, acting under the ARTICLES OF CONFEDERATION, passed the NORTHWEST ORDINANCE. This was the outstanding achievement of government under the "Articles" -- which seemed otherwise inept and impotent. Historians today judge the Northwest Ordinance as a basic document in the American heritage, one that ranks in importance only behind the Declaration of Independence and the Constitution of 1787.

Our greatest Presidents have praised the Northwest Ordinance. President Franklin D. Roosevelt called it "that third great charter...the highway over which poured the westward march of our civilization...the plan on which the United States was built." President Theodore Roosevelt said that the Northwest Ordinance would "ever rank among the foremost of American State papers, coming in that little group which includes the Declaration of Independence, the Constitution, Washington's Farewell Address, and Lincoln's Emancipation Proclamation and Second Inaugural." Both Presidents Washington and Lincoln also lauded the Northwest Ordinance as the foundation for settlement and exansion of the nation.

What is the Northwest Ordinance? Why is it so important in the American heritage? Why should Americans today know about it and value it?

The Northwest Ordinance: A Definition

An ordinance is a type of law passed by a legislature that is dependent upon a higher governing body for all of its authority. In the American system of government today, we refer to acts of local government as ordinances. This indicates that the local government (for example, a city or town government) is subordinate or inferior to the government of the state in which it is located. Ordinances of the local governments of Indiana, for example, must comply with the statutes (laws) of the Indiana state government and with the Constitution of the state of Indiana. These ordinances are issued under authority granted by the higher government, in this instance, the state government. In the 1780's, the acts of Congress were called ordinances (not statutes) to indicate that the Congress under the Articles of Confederation was subordinate to the thirteen state governments of the United States.

The Northwest Ordinance provided for the government of territory north and west of the Ohio River. It promised eventual statehood, on equal terms with other states; not less than three nor more than five states were to be carved out of the area. It established a process for moving through stages of territorial government to petition for statehood. The Northwest Ordinance also reaffirmed a system for dividing land that was set forth in the Land Ordinance of 1785. Finally, the Northwest Ordinance contained six "articles of compact, between the orginal States and the people and States" of the Northwest Territory. These articles guaranteed civil liberties and rights to the inhabitants of the territory. Following are brief discussions of these main aspects of the Northwest Ordinance: (1) government and statehood (2) civil liberties and rights.

*Excerpt from The Northwest Ordinance and Constitutional Development in Indiana
A paper presented by Dr. James Madison of Indiana University

The final acts of the third stage of government under the Northwest Ordinance involved petition for statehood by the territory to the Congress of the United States. The Congress was obligated to grant statehood through an enabling act if the petitioner satisfied all conditions for statehood indicated in the Northwest Ordinance. These conditions included a state constitution that provided a "republican form of government" (government by representatives elected by the people). In 1803, Ohio became the first part of the Northwest Territory to achieve statehood. Indiana became a state in 1816, and Illinois entered the Federal Union in 1818. Michigan (1837) and Wisconsin ((1848) were the last two states to be formed from the Northwest Territory. The Northwest Ordinance of 1787 was also the model by which all other territories of the United States moved to statehood. Thus, an ordinance passed in 1787 set the terms by which the thirteen original states grew into a nation of 50 states.

Civil Liberties and Rights in the Articles of Compact

The Northwest Ordinance of 1787 includes Six "Articles of Compact." A compact is an agreement between two parties, which may not be broken without mutual consent of those who made it. The Northwest Ordinance says (Section 14): The following six articles "shall be considered as articles of compact, between the original States and the people and States in the said territory, and forever remain unalterable, unless by common consent...." The Articles of Compact provide civil liberties and rights to the people; government officials may NOT legally take away these rights or liberties.

ARTICLE I: Provides FREEDOM OF RELIGION.

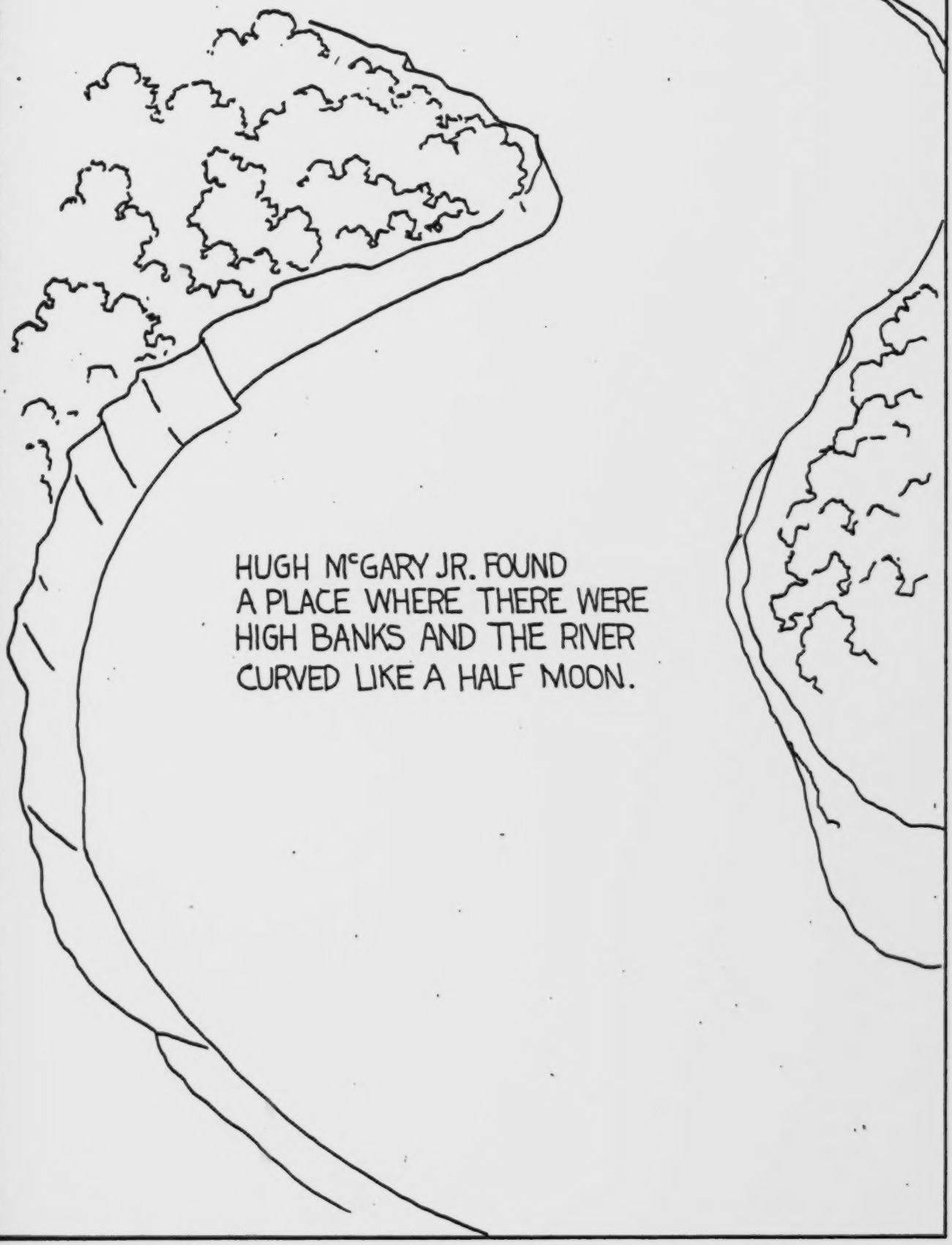
ARTICLE II: Guarantees the privilege of the WRIT OF HABEAS CORPUS. (A writ of habeas corpus requires officials to bring a person whom they have arrested and held in custody before a judge in a court of law. The officials who are holding the prisoner must convince the judge that there are lawful reasons for holding him or her. If the judge finds their reasons for holding the prisoner unlawful, then the court frees the suspect. The writ of habeas corpus is a great protection of individuals against government officials who might want to jail them only because they belong to unpopular groups or criticize the government.)

Several other rights are guaranteed to persons accused of crimes, such as TRIAL BY JURY, PROTECTION AGAINST CRUEL AND UNUSUAL PUNISHMENT and PREVENTION OF EXCESSIVE BAIL as a condition of release from jail while awaiting a trial.

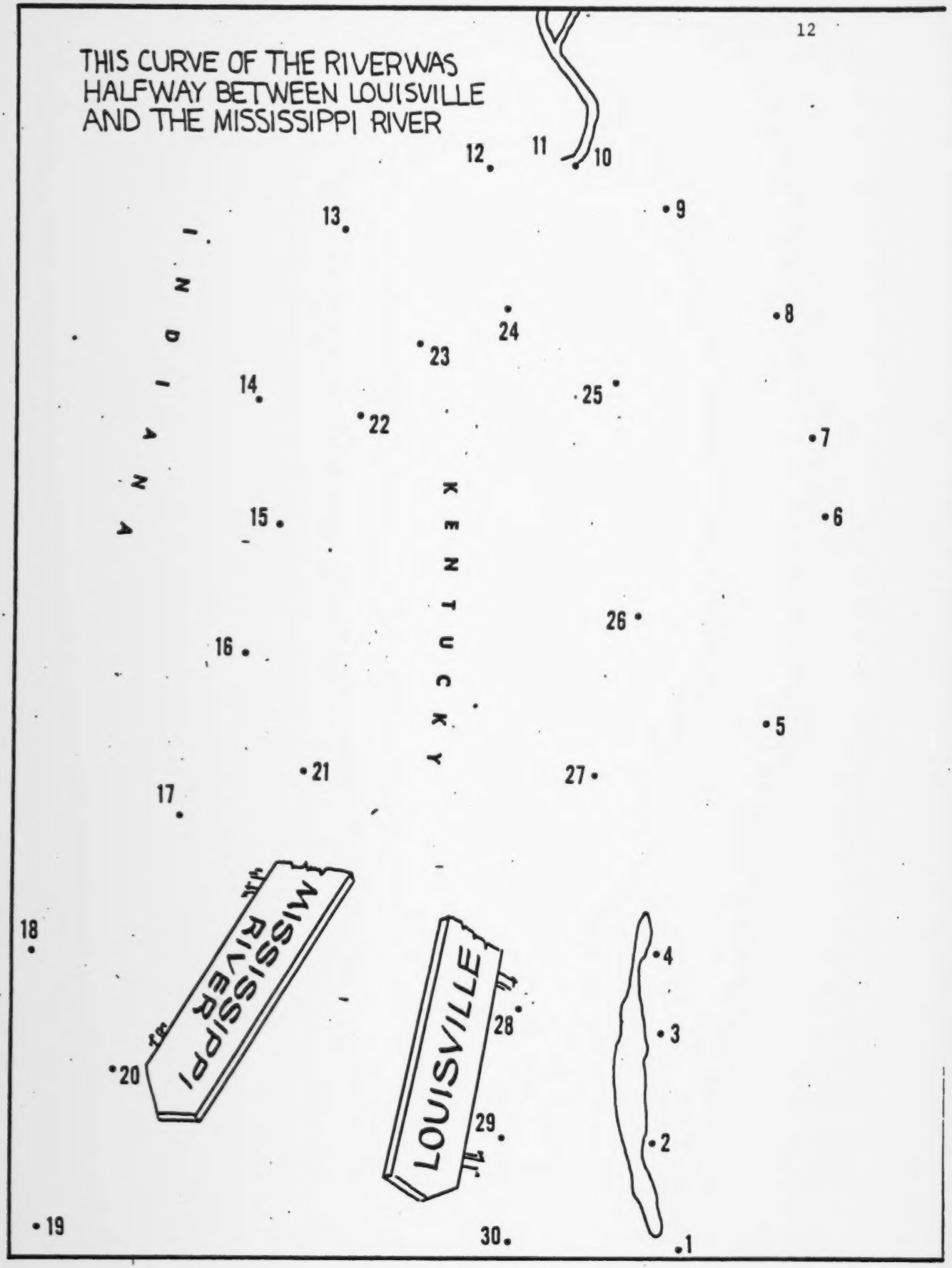
Finally, ARTICLE II says that persons are PROTECTED AGAINST GOVERNMENT ACTS THAT WOULD DEPRIVE THEM OF LIFE, LIBERTY, OR PROPERTY WITHOUT DUE PROCESS (fair and proper legal procedures) and THAT WOULD DEPRIVE THEM OF PROPERTY WITHOUT FAIR COMPENSATION.

ARTICLE III: States the IMPORTANCE OF SCHOOLS AND EDUCATION FOR ALL PEOPLE. This article also states that the Indian people of the Northwest Territory should be treated fairly.

Evansville began when Col. Hugh McGary, Jr., bought 200 acres of land from the U. S. government in 1812. McGary wanted a city, not just a small town, so he enlisted the help of Gen. Robert M. Evans, an attorney and territorial legislator, for whom Evansville was ultimately named. They drew up plans to help Evansville become a city.



HUGH McGARY JR. FOUND
A PLACE WHERE THERE WERE
HIGH BANKS AND THE RIVER
CURVED LIKE A HALF MOON.


THIS CURVE OF THE RIVERWAS HALFWAY BETWEEN LOUISVILLE AND THE MISSISSIPPI RIVER
12
11
10
12
13
9
INDIANA
24
8
23
14
25
22
7
KENTUCKY
15
6
26
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5
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MISSISSIPPI RIVER
LOUISVILLE
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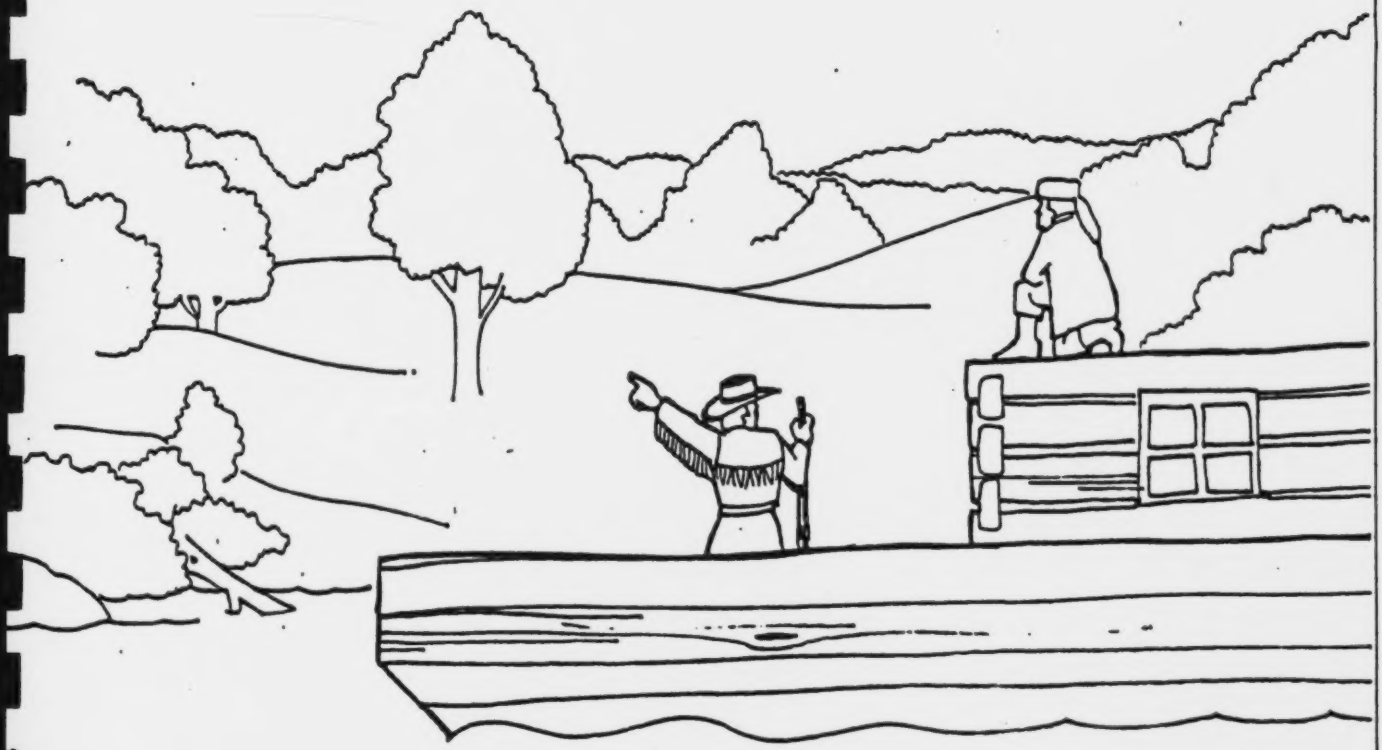
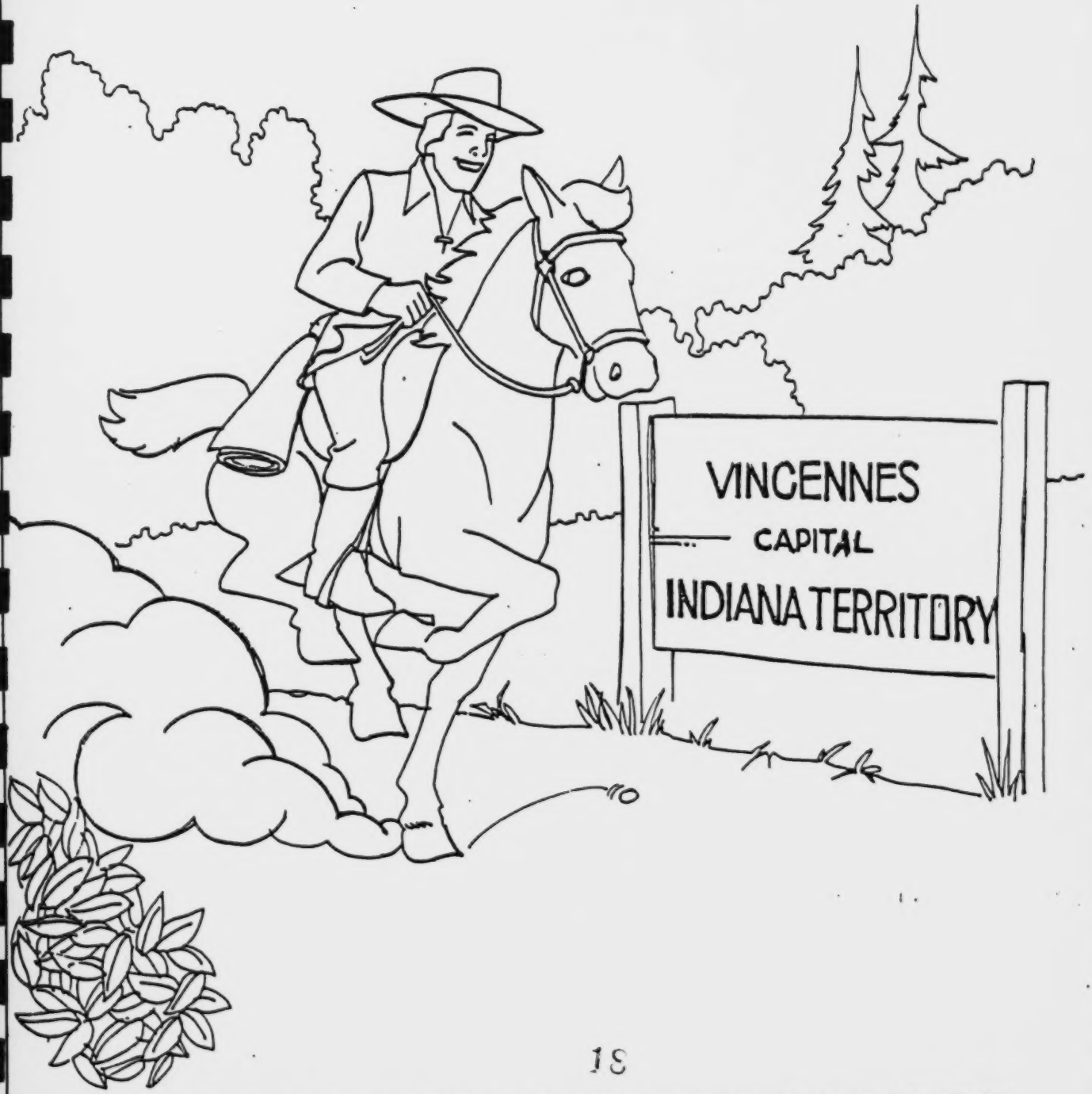
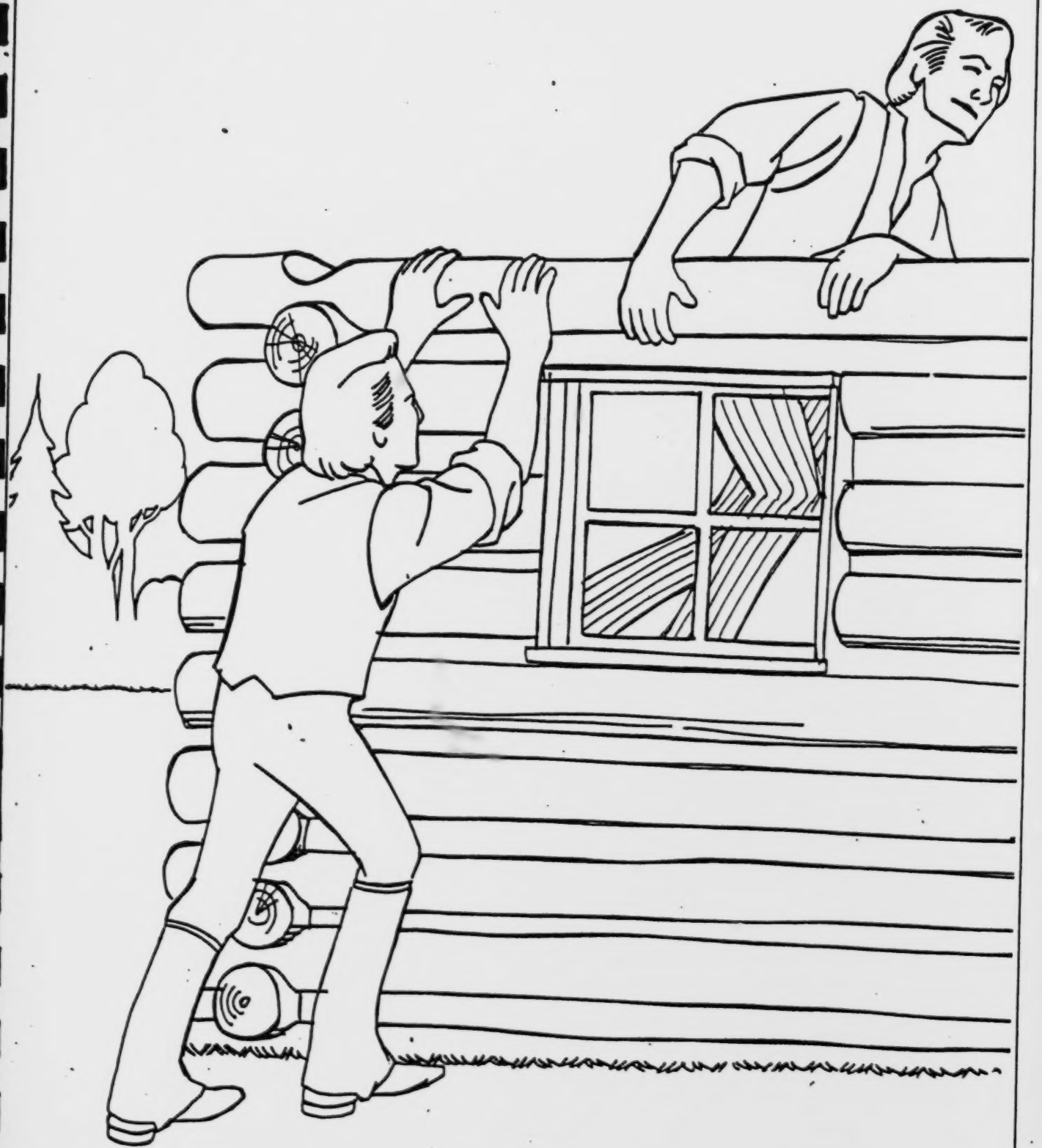


HUGH McGARY THOUGHT THIS CURVE WOULD BE A GOOD PLACE TO BUILD A TOWN.



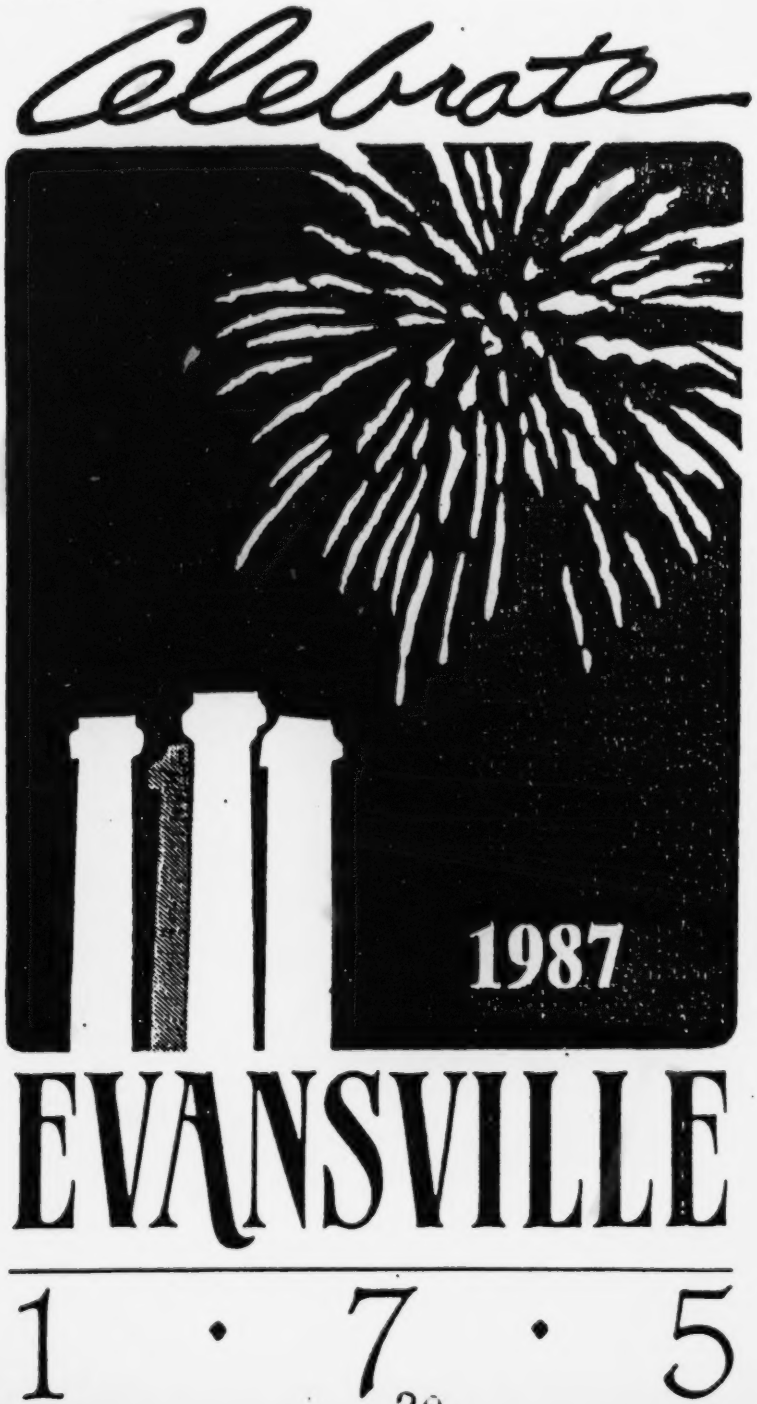
18

IN MARCH, 1812, HUGH McGARY WENT TO VINCENNES AND BOUGHT THE LAND FROM THE GOVERNMENT.



SEVERAL FRIENDS CAME TO HELP HUGH McGARY BUILD HIS LOG CABIN. IT WAS BUILT AT THE CORNER OF RIVER SIDE AND MAIN STREETS. 19

In 1987 the citizens of Evansville are celebrating the 175th Anniversary of Evansville's founding. Do you know what your school is planning to do for the Celebration? Be sure to read the newspapers and listen to the radio and TV for information about community activities celebrating Evansville's 175th birthday. The theme of the celebration is "Celebrate Evansville."

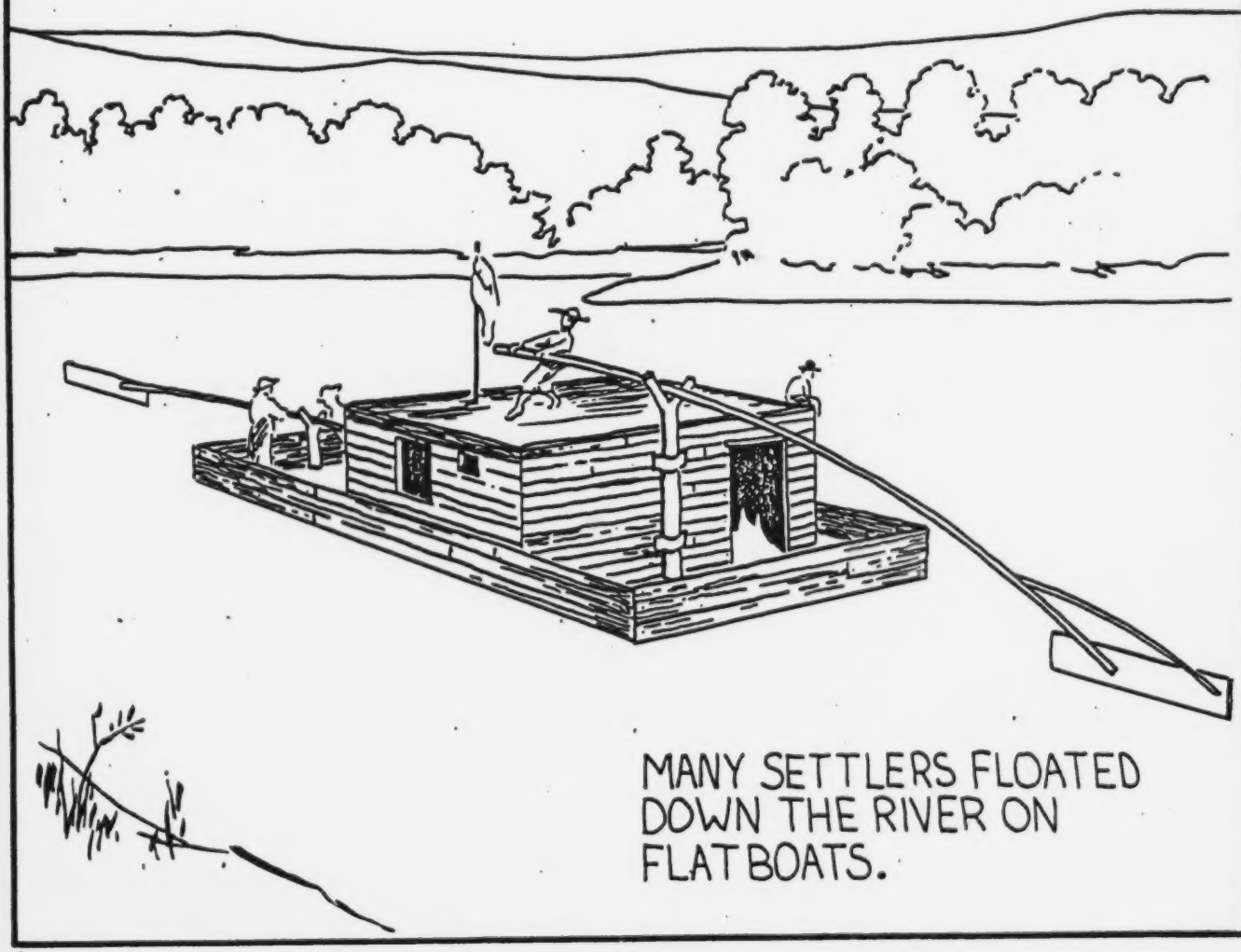


IN 1814, HUGH McGARY DECIDED TO NAME THE TOWN ***EVANSVILLE*** TO HONOR HIS FRIEND, COLONEL ROBERT EVANS. "EVANSVILLE" MEANS "TOWN OF EVANS."

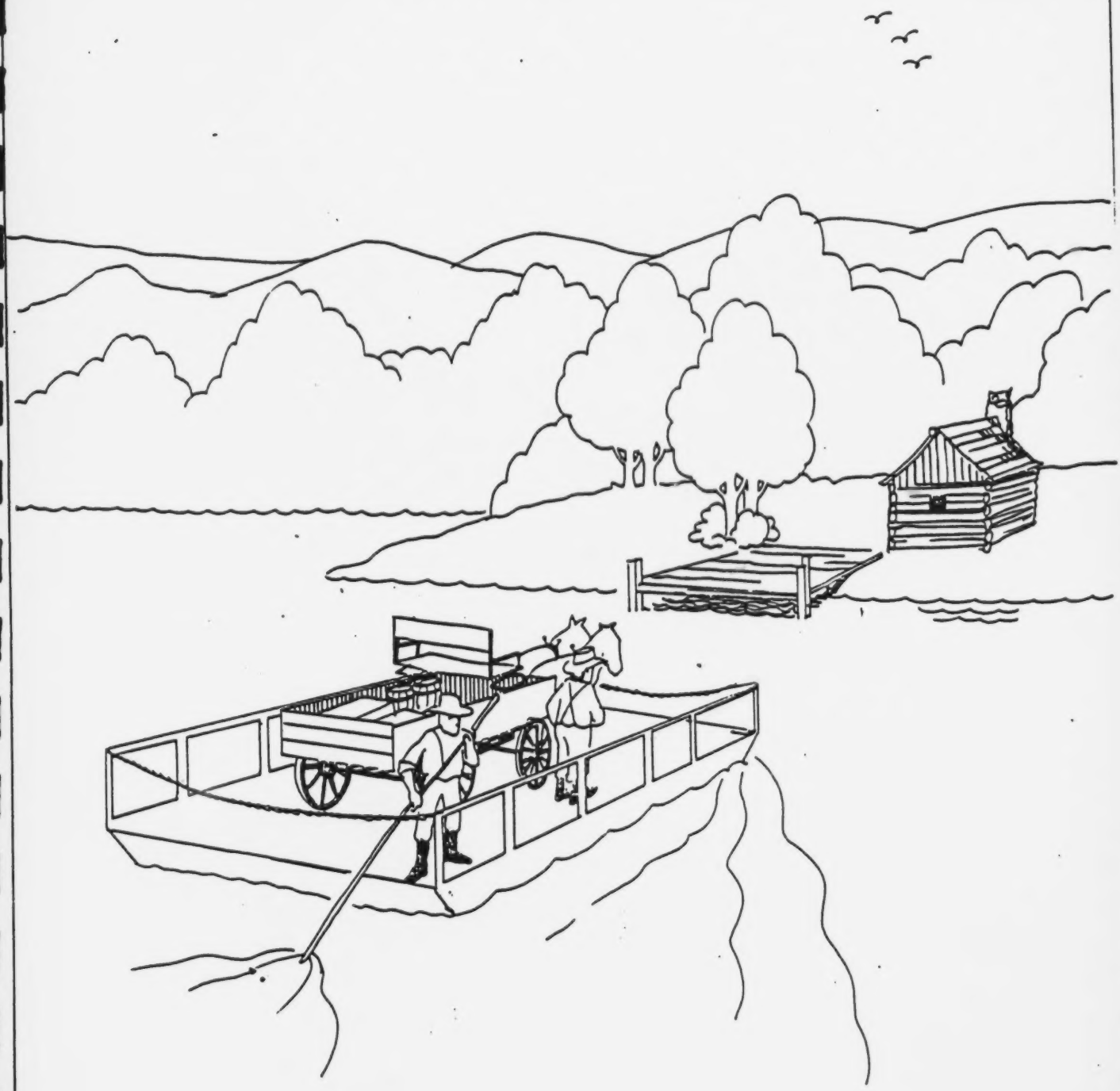
A community must file papers with the State government in order to be officially known as a city. This process is called incorporation. On January 27, 1847, Evansville was incorporated as a city. By then Evansville was manufacturing stoves, farm implements, pottery and tobacco products. At about the same time it also became an official River Port of Entry. This means the city was designated by the United States government to receive goods and foreign citizens through its Customs House. Evansville's Custom House was located in the Old Post Office on Second Street in the downtown area.

IN 1847 EVANSVILLE BECAME A CITY. THE FIRST MAYOR, JAMES G. JONES, WAS A NEPHEW OF COLONEL EVANS.
JONES

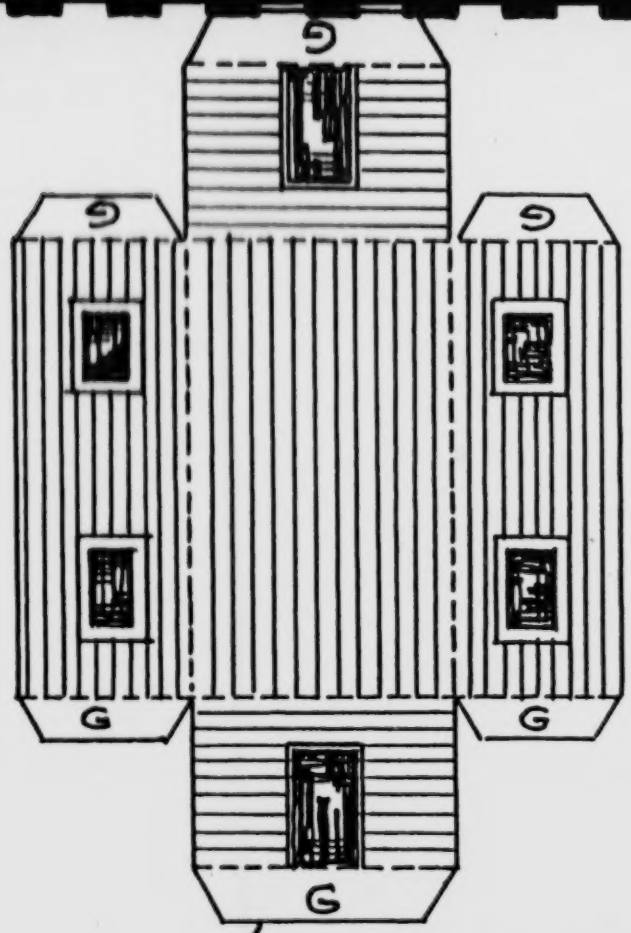
The pioneer settlers used flatboats or rafts to float down the river. Later they took apart their rafts or boats and used the lumber to build cabins. Then keelboats, which were pointed on both ends and could go upstream, were used. Crews used long poles to push keelboats against the current.



MANY SETTLERS FLOATED DOWN THE RIVER ON FLAT BOATS.

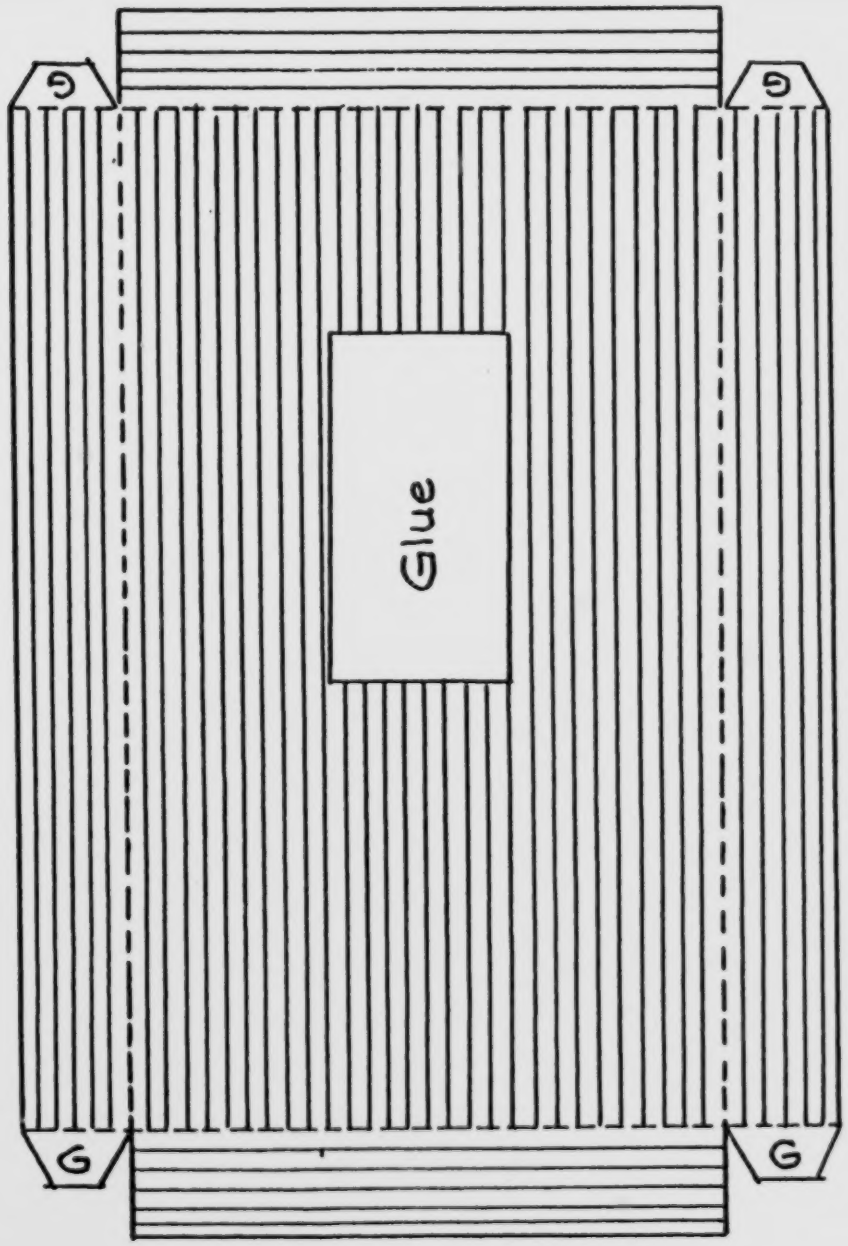


THERE WERE NO BRIDGES, SO HUGH McGARY HAD A FERRY BOAT TO TAKE PEOPLE ACROSS THE RIVER.



Fold down and glue to boat

No.12 FLATBOAT



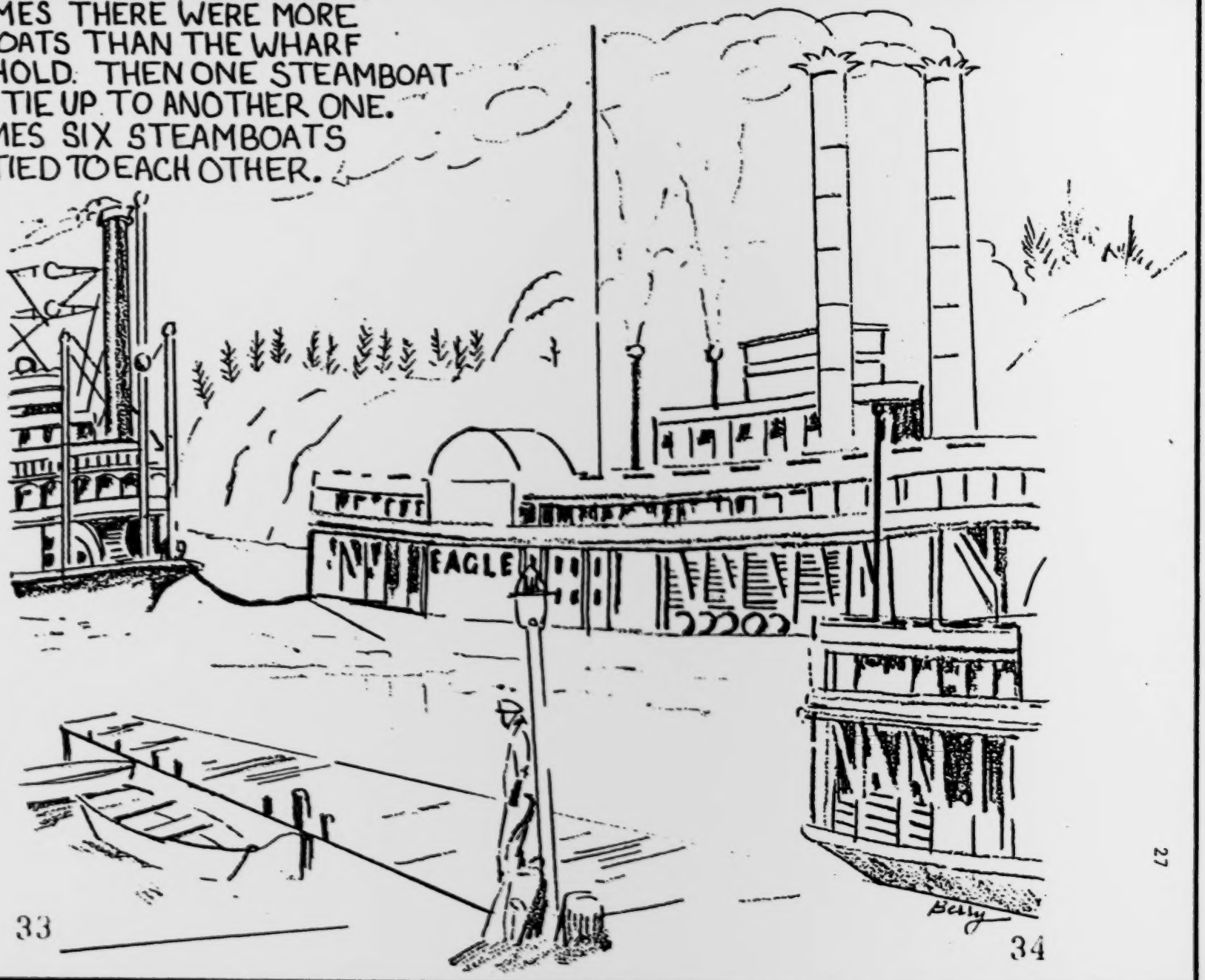
23

By the 1820's, steamboats were actively using the river. They could go in either direction on the river, but only in deep rivers. By the 1900's the tugboats pushing the barges were used for the shipment of materials and products.

N. DAKOTA
BISMARCK
S. DAKOTA
MISSOURI RIVER
ST. PAUL
MINNESOTA
WISCONSIN
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
MICHIGAN
LAKE ONTARIO
NEW YORK
LAKE ERIE
PENNSYLVANIA
MISSISSIPPI RIVER
IOWA
OMAHA
NEBRASKA
ILLINOIS
INDIANA
OHIO
CINCINNATI
OHIO RIVER
KANSAS CITY
MISSOURI RIVER
ST. LOUIS
LOUISVILLE
W. VIRGINIA
KANSAS
MISSOURI
KENTUCKY
VIRGINIA
OKLAHOMA
TENNESSEE
N. CAROLINA
ARKANSAS
MISSISSIPPI RIVER
SOUTH CAROLINA
MISSISSIPPI
GEORGIA
TEXAS
ALABAMA
LOUISIANA
NATCHEZ
FLORIDA
NEW ORLEANS
GULF OF MEXICO

STEAMBOATS BEGAN TO USE THE RIVER TO BRING GOODS FROM NEW ORLEANS AND NEW YORK.

TRAFFIC ON THE RIVER WAS HEAVY. SOMETIMES THERE WERE MORE STEAMBOATS THAN THE WHARF COULD HOLD. THEN ONE STEAMBOAT WOULD TIE UP TO ANOTHER ONE. SOMETIMES SIX STEAMBOATS WERE TIED TO EACH OTHER.



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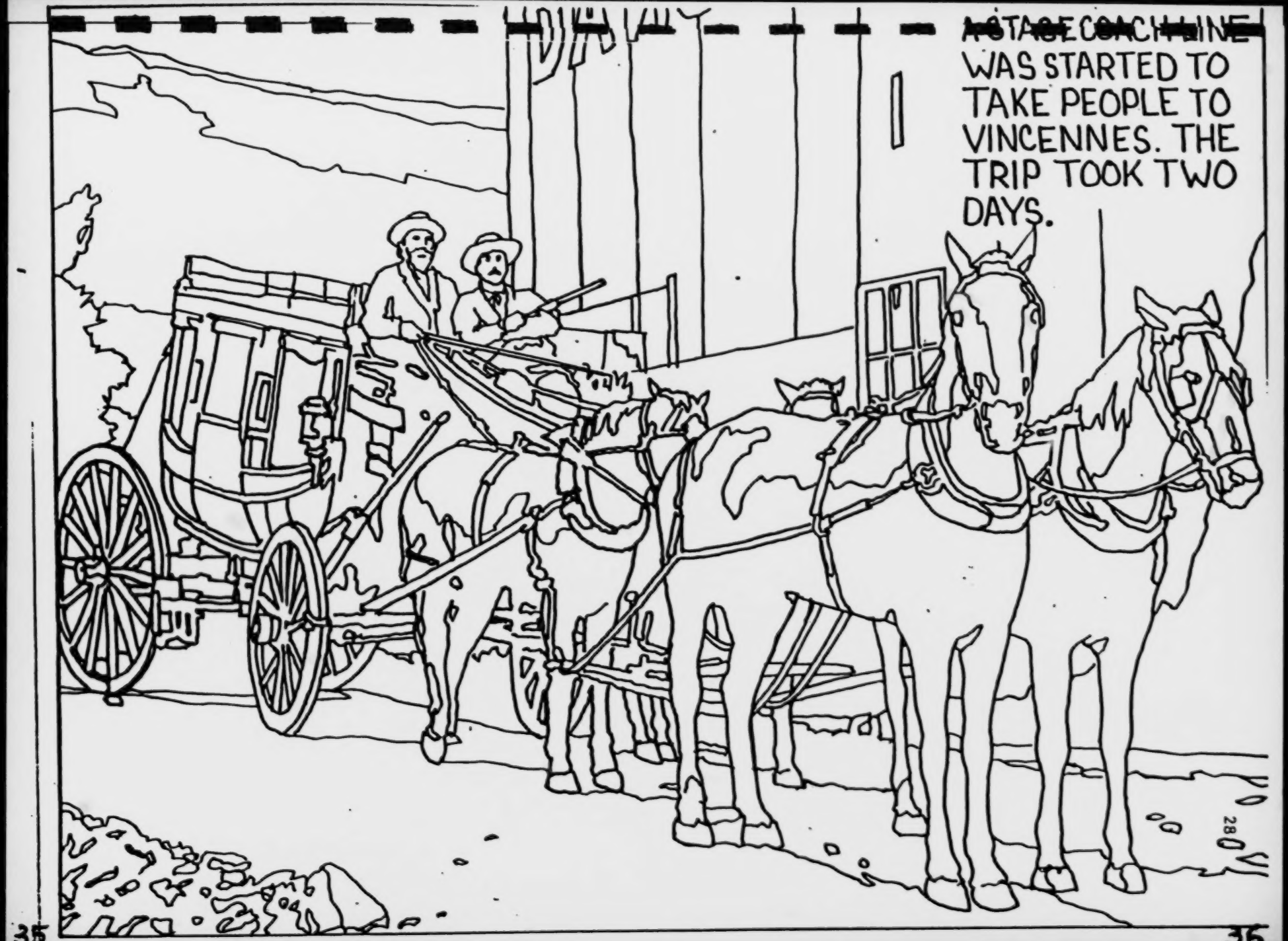
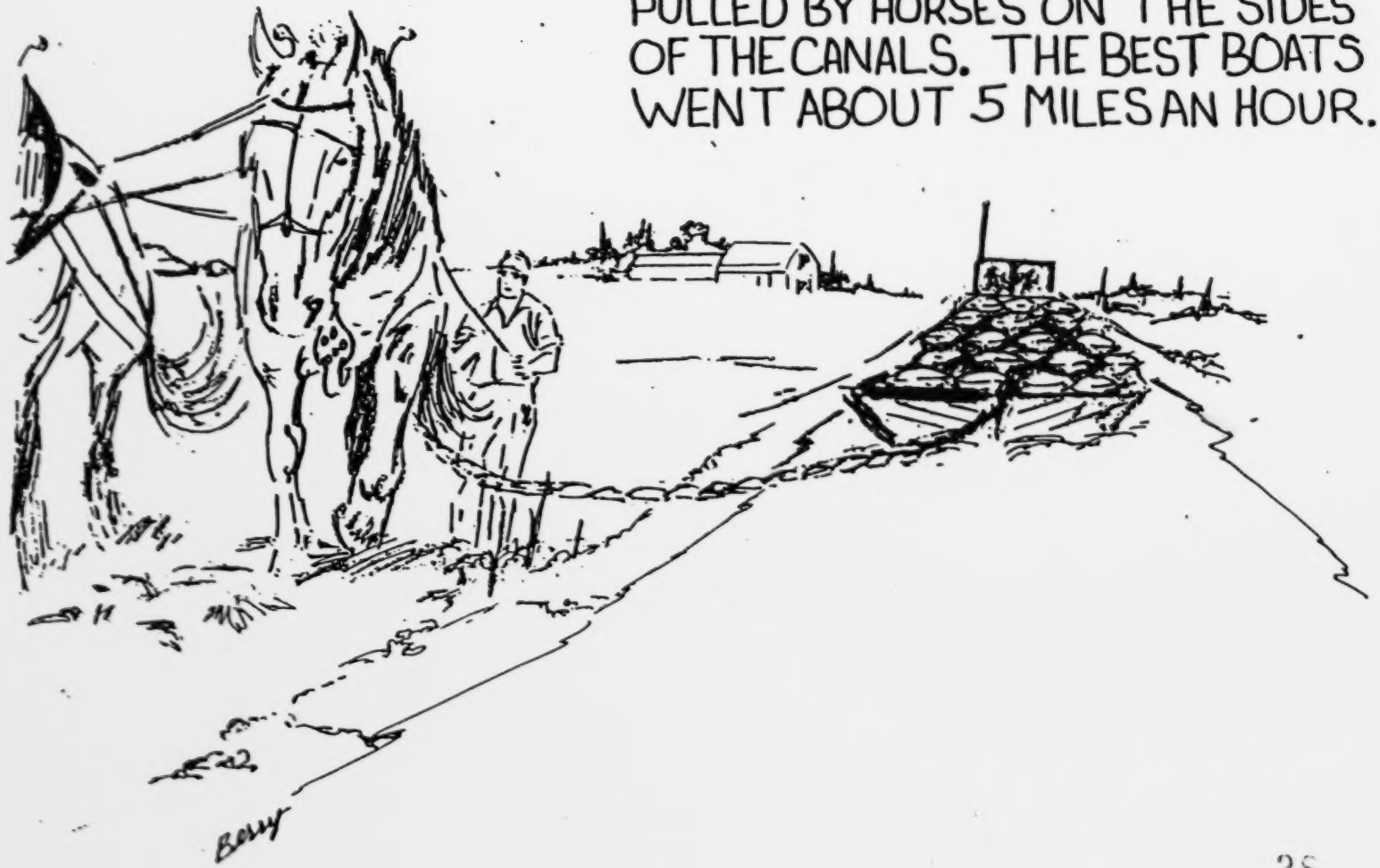

A STAGECOACH LINE WAS STARTED TO TAKE PEOPLE TO VINCENNES. THE TRIP TOOK TWO DAYS.
280

IN 1836, THE WABASH AND ERIE CANAL WAS STARTED TO BRING MORE TRADE TO EVANSVILLE. CANALBOATS WERE PULLED BY HORSES ON THE SIDES OF THE CANALS. THE BEST BOATS WENT ABOUT 5 MILES AN HOUR.



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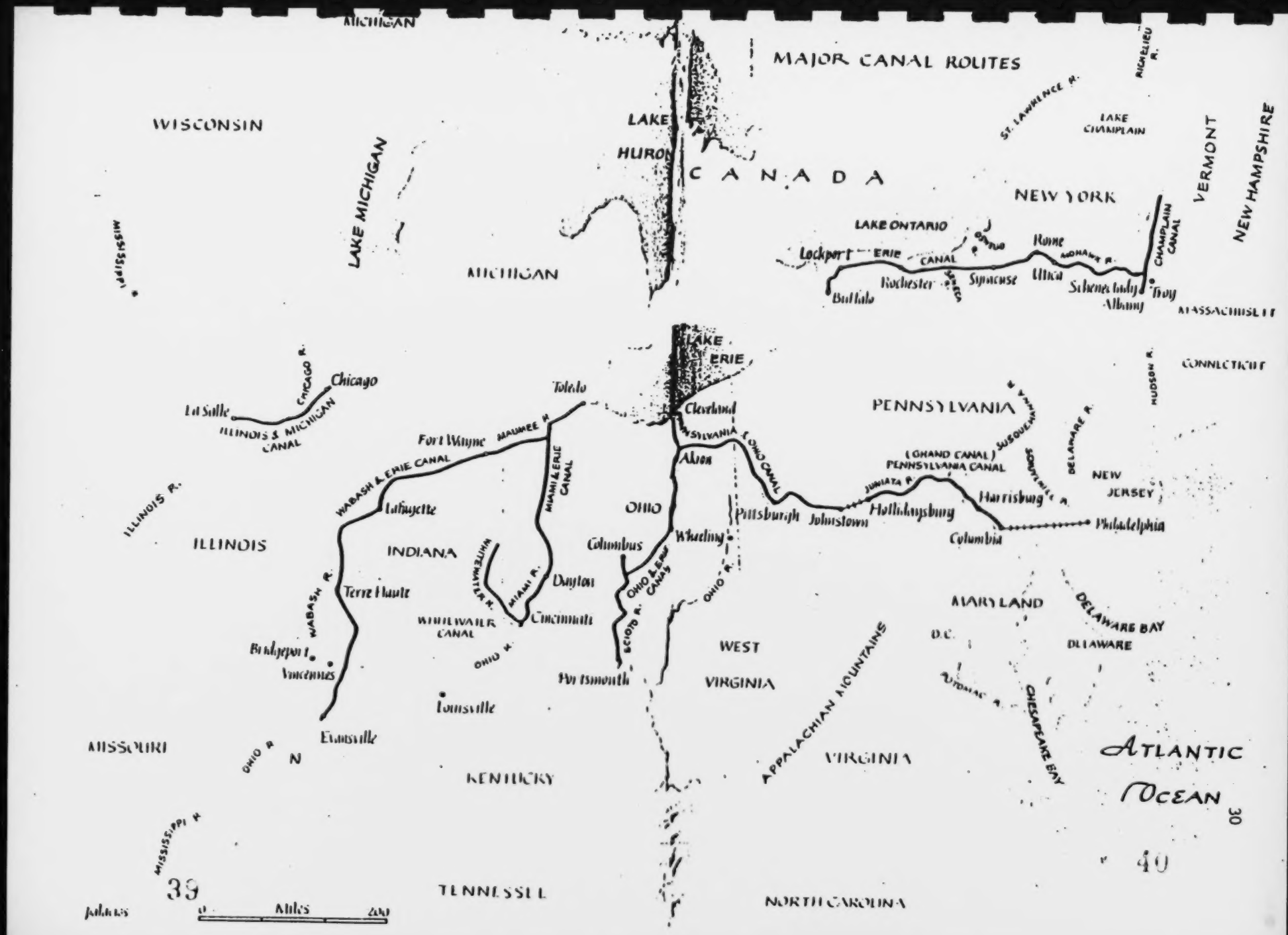
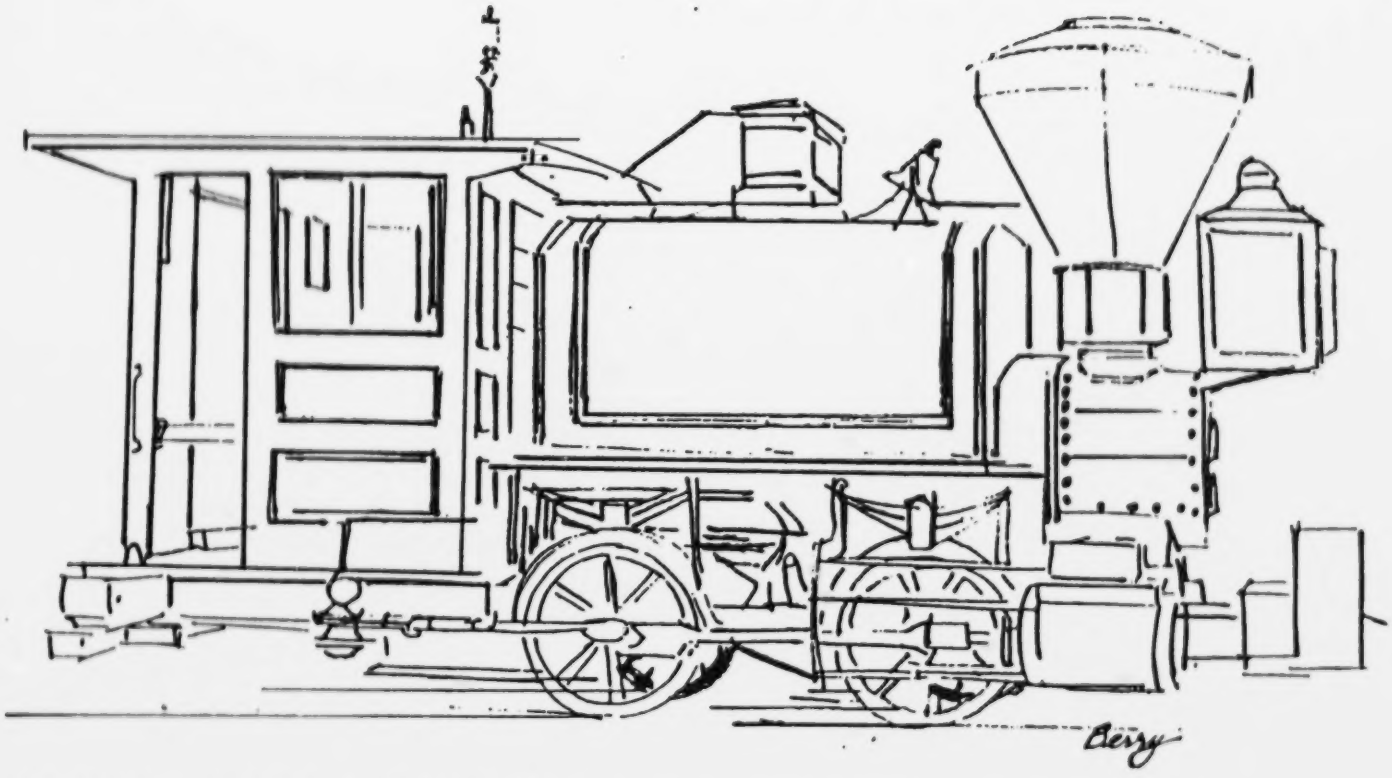
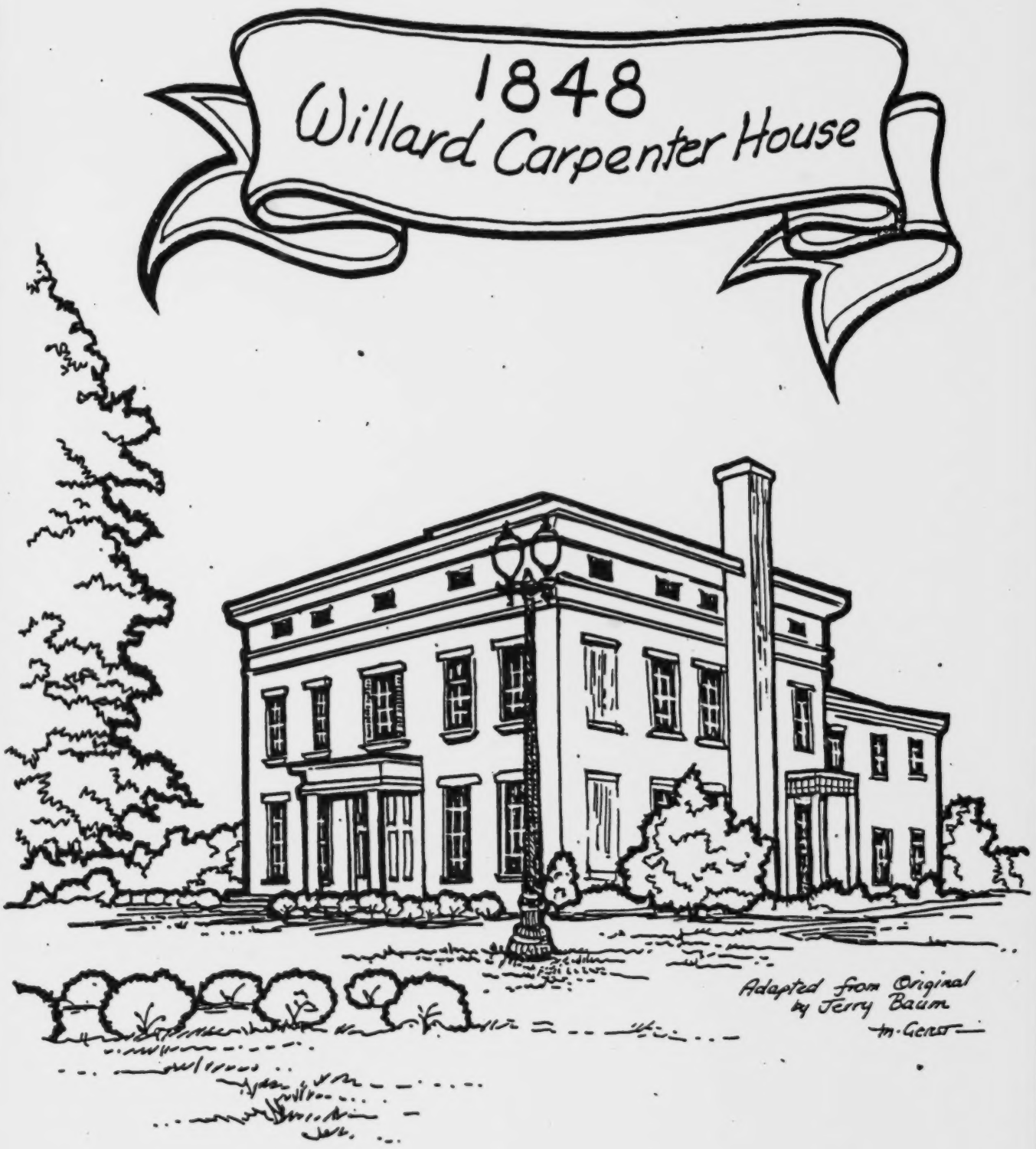

MAJOR CANAL ROUTES
MICHIGAN
WISCONSIN
LAKE MICHIGAN
LAKE HURON
CANADA
NEW YORK
LAKE ONTARIO
LAKE CHAMPLAIN
ST. LAWRENCE R.
RICHELIEU R.
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
CONNECTICUT
Lockport
ERIE CANAL
Rome
MOHAWK R.
CHAMPLAIN CANAL
Buffalo
Rochester
Syracuse
Utica
Schenectady
Albany
Troy
LAKE ERIE
Toledo
Cleveland
PENNSYLVANIA
SUSQUEHANNA R.
HUDSON R.
DELAWARE R.
NEW JERSEY
Chicago
CHICAGO R.
La Salle
ILLINOIS & MICHIGAN CANAL
Fort Wayne
MAUMEE R.
WABASH & ERIE CANAL
MIAMI & ERIE CANAL
PENNSYLVANIA & OHIO CANAL
(GRAND CANAL) PENNSYLVANIA CANAL
JUNIATA R.
Harrisburg
Philadelphia
Lafayette
Akron
OHIO
Pittsburgh
Johnstown
Hollidaysburg
Columbia
ILLINOIS R.
ILLINOIS
INDIANA
Columbus
Wheeling
WHITEWATER R.
MIAMI R.
Dayton
OHIO & ERIE CANAL
SCIOTO R.
OHIO R.
MARYLAND
DELAWARE BAY
DELAWARE
WABASH R.
Terre Haute
Cincinnati
WHITEWATER CANAL
Bridgeport
Vincennes
D.C.
WEST VIRGINIA
Portsmouth
APPALACHIAN MOUNTAINS
POTOMAC R.
CHESAPEAKE BAY
Louisville
MISSOURI
Evansville
OHIO R.
VIRGINIA
ATLANTIC OCEAN
KENTUCKY
MISSISSIPPI R.
TENNESSEE
NORTH CAROLINA
39
40
30
Miles
200



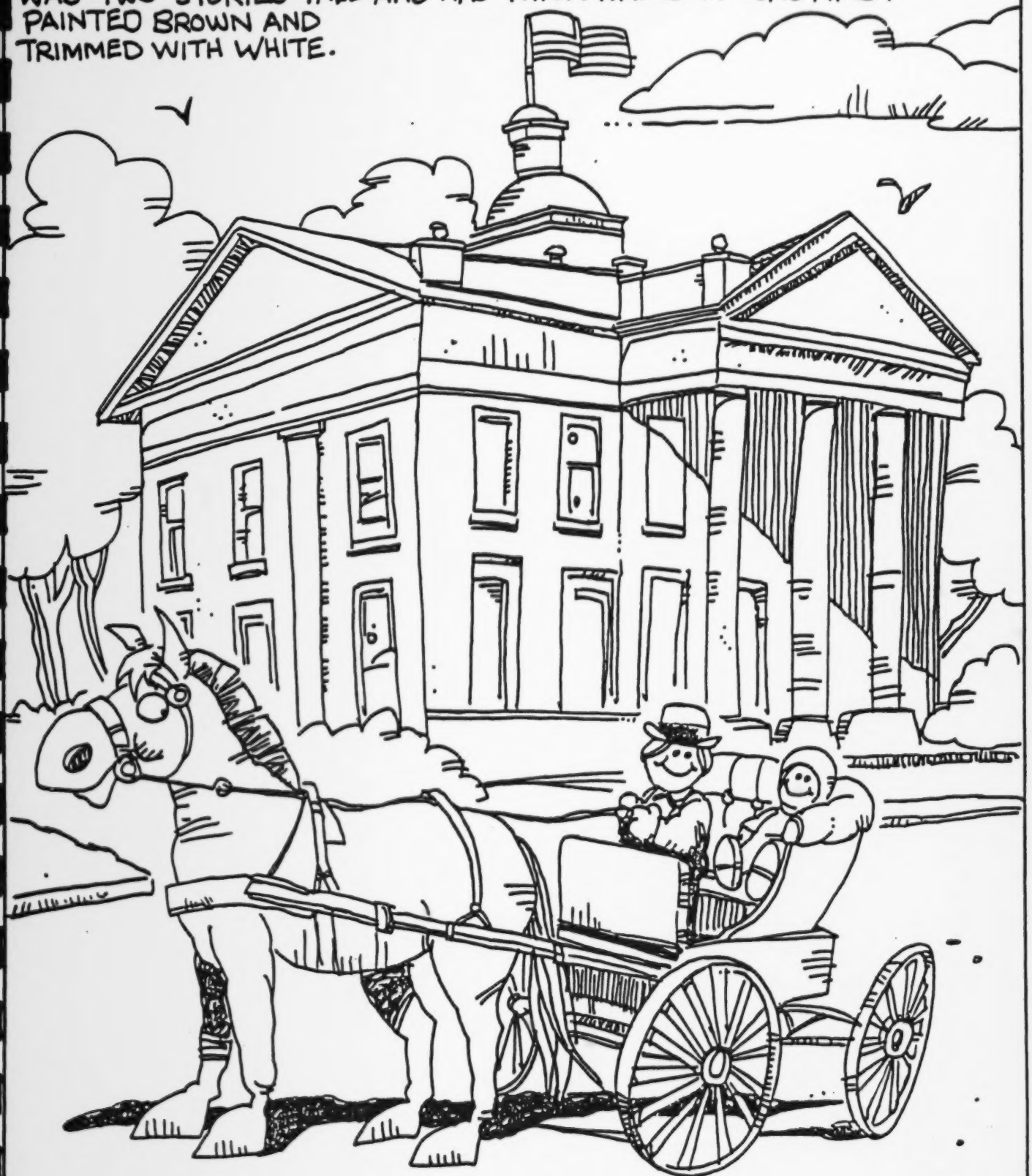
AROUND 1850 A RAILROAD WAS STARTED. IT FIRST RAN FROM EVANSVILLE TO PRINCETON. PEOPLE LIKED THE RAILROAD AND SOON THE CANAL WAS FORGOTTEN.

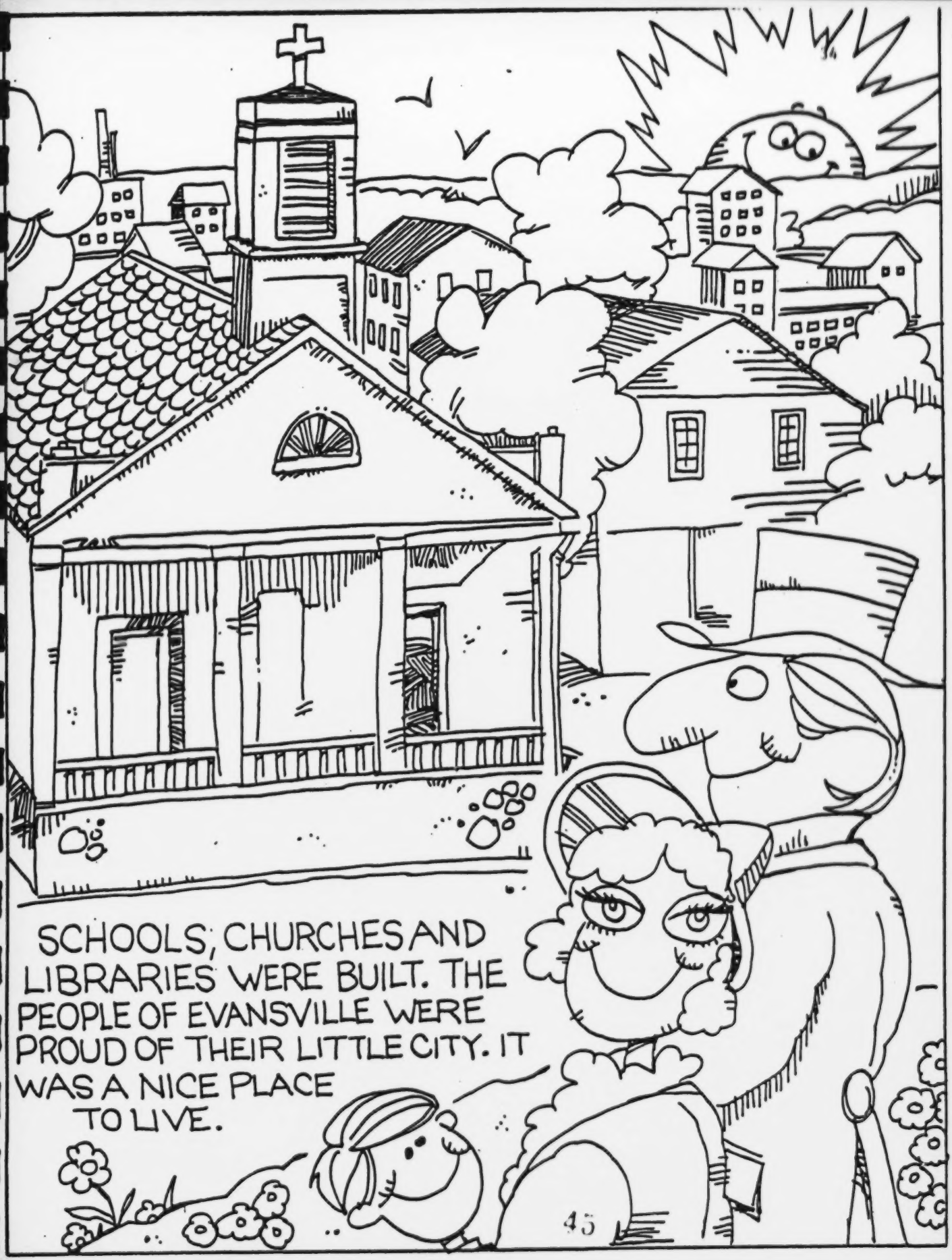


43

Some people believe this home was part of the Underground Railroad.

THE FIRST COURTHOUSE WAS BUILT AT THIRD AND MAIN STREETS. IT WAS TWO STORIES TALL AND HAD THICK WALLS. IT WAS FIRST PAINTED BROWN AND TRIMMED WITH WHITE.




SCHOOLS, CHURCHES AND LIBRARIES WERE BUILT. THE PEOPLE OF EVANSVILLE WERE PROUD OF THEIR LITTLE CITY. IT WAS A NICE PLACE TO LIVE.

WHAT IS A RIVER?

A river is an inland, large stream of water flowing along a definite path, or channel. A river flows downstream, away from its source, or beginning. Since the opposite of down is up, the direction toward a river's source, or beginning, is called upstream. When you move upstream on a river, you travel toward its source or beginning.

The mouth of a river is the place where a river flows into a larger body of water.

The Mississippi River flows south. If you were traveling north along the Mississippi toward the Ohio River you would be going upstream. The Ohio River's mouth is Cairo, Illinois.

When two rivers join, the smaller river is a tributary of the larger river. The Ohio River is a tributary of the Mississippi River. If you were traveling along the Ohio River toward the Mississippi River, you would be going downstream.

Wastes from towns and cities, harmful substances from factories, and chemicals from farms have washed into the river and caused a major pollution problem for these towns and cities along the Ohio River. The pollution also threatens the fish and other wild life.

Simply, a river means that rain falls on the earth; snow and ice melt, and springs gush out of the ground. The water from these sources flows down mountainsides and hillsides, forming tiny streams that run into bigger ones. These streams join small rivers that flow into still larger rivers. Finally, they join a main river. It empties into the sea or ocean.

VOCABULARY

river - a body of water found on land.

source - a place where a river begins.

mouth - a place where a river ends. At the mouth, the river flows into another body of water.

river valley - the land on either side of a river. Rivers collect bits of rock and soil as they move along. When a river floods, it leaves soil and rock in the river valley. This soil makes the land good for growing crops. Many people farm in river valleys.

delta - river deposits of rock and soil near the river mouth, forming new land. The soil is very rich, like river valleys. The Mississippi River made a delta.

downstream - a river flows downhill from areas of high elevation to areas of lower elevation; a river flows toward its mouth.

delta - a broad, usually triangle-shaped area of islands or low-lying ground at the mouth of some rivers. It is formed from soil that has been carried downstream by the flow of the river.

upstream - the direction toward a river's source. The river's movement is against a river's current.

current - the movement of water in a river's channel.

course - the path a river takes.

riverbed - the bottom of the channel

river system - a main river and all its tributaries or branches. A network of rivers.

tributary - a stream that flows into a larger stream.

headwaters - streams and beginning of the river.

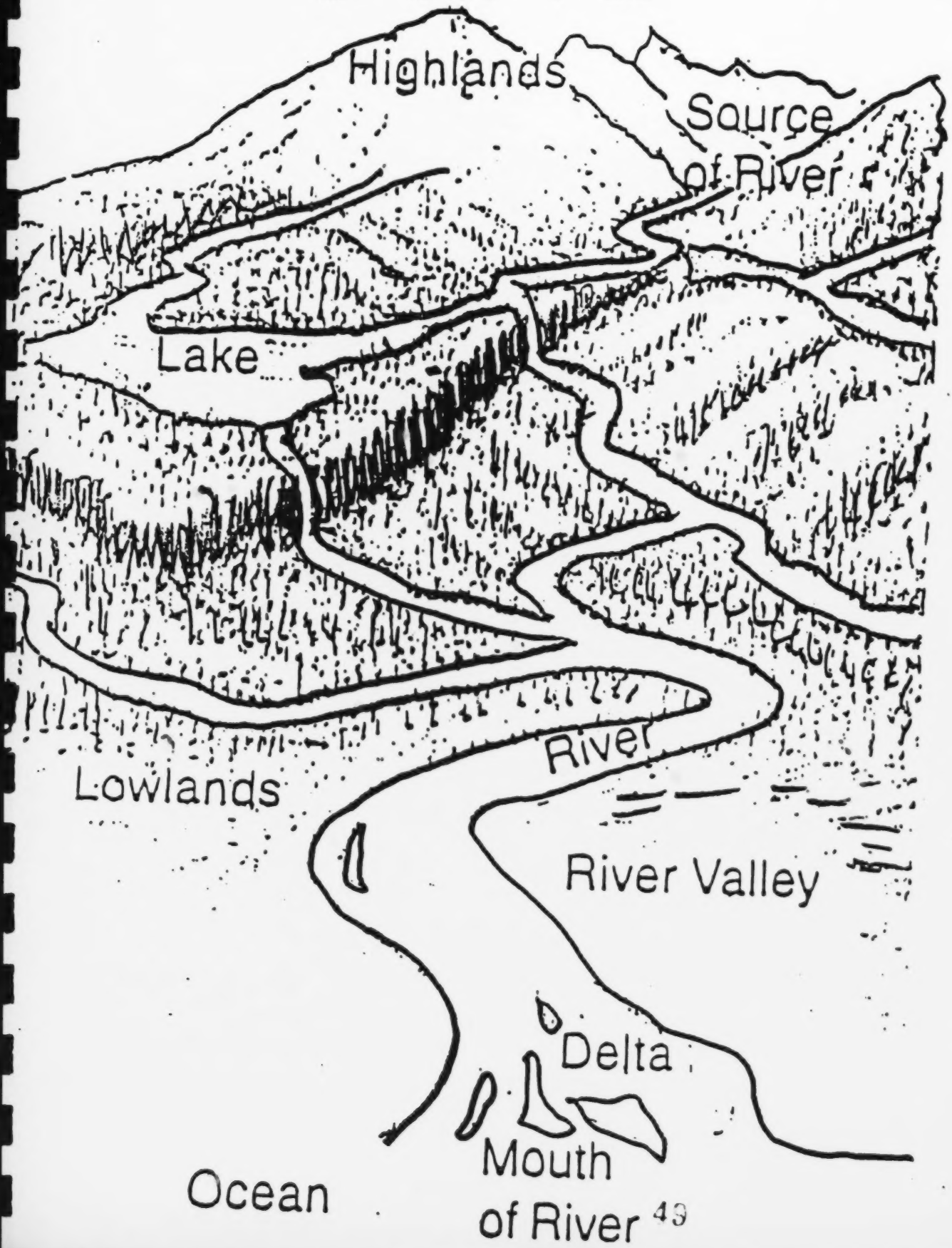
channel - groove in the earth carved by the river as it flows.

banks - sides of the river.

waterfall - a steep drop in the channel

rapids - a part of the river where the current runs very swiftly.

The Path Of A River



VOCABULARY

(See vocabulary words in river section)

1. elevation -
2. plains -
3. plateaus -
4. geologist -
5. glacier -
6. flatboat -
7. keelboat -
8. current -
9. evaporation -
10. condensation -
11. precipitation -
12. water cycle -
13. river -
14. pollution -
15. network -
16. erosion -
17. deposition -
18. conservation -
19. ecology -
20. habitat -
21. reservoir -
22. sewage plant -
23. irrigate -
24. map -
25. symbols -

26. key -

27. legend -

28. capital -

29. boundary -

30. border -

31. grid -

THE WORK OF RIVERS AND STREAMS

Three processes keep a balance between the high places and the low places on the earth. They are:

1. erosion - the wearing down of the land by rivers and streams.
2. transportation - washing the eroded materials.
3. deposition - building up the land.

Water erosion

1. standing liquid - changes rocks and soil chemically through a dissolving action.
2. ice - breaks up rocks mechanically.
3. movement as ice or water - erodes.

Usefulness of rivers

1. Part of water cycle, working to keep earth's water supply constant.
2. Renews the land by depositing fertile soil.
3. Supplies water for home use, irrigation, industry.
4. Transportation routes
   a. Connects inland cities with seacoasts and other inland cities.
   b. Cheap means of carrying heavy and bulky materials.
5. Home to different kinds of fish, food for people.
6. Generates electricity.
7. Recreation.

Problems of rivers

1. Chemicals sprayed on crops are washed into rivers, polluting waters, and living things in them, causing harmful changes to the environment.
2. Leveling land.
3. Draining swamps.
4. Altering courses of rivers.

WATER CONSERVATION

As the population of a country, city, town, area grows, the demand for water also grows. Conservation becomes essential.

It is estimated that each person in the United States drinks an average of 200 gallons of water per year. However, 160,000 gallons per person is used each year by industry. Billions of gallons of water are needed to irrigate crops. It amounts to about 1,300 billion gallons daily being needed in the United States.

On the average 90% of the water used is returned to rivers or the sea as waste. Untreated sewage is dumped, harmful industry materials are returned as waste water, and some water cannot be used even after purification methods have been tried. The need exists for better control of water pollution.

FACTS ABOUT THE OHIO RIVER

The Ohio River is a tributary of the Mississippi River and is 981 miles long. It is formed by the joining of the Allegheny and Monongahela rivers at Pittsburgh, Pennsylvania. It flows through rich farm areas, providing an important means of transporting products. The chief tributaries of the river are the Green, Wabash, Tennessee, Cumberland, Big Sandy and Miami Rivers.

The Ohio River flows through coal fields and industrial districts. It flows mainly southwestward and forms the southern borders of Ohio, Indiana, and Illinois and the northern boundaries of West Virginia and Kentucky. It empties into the Mississippi River at Cairo, Illinois.

Almost all of the cargo transported on the Ohio River is moved on large barges that are pushed by tugboats. Dams and canals provide a minimum water depth of nine feet. Locks in the canals raise and lower the water level of the river, enabling ships to travel the entire length of the Ohio River.

The Ohio River is the northern boundary of the traditional "South."

The Ohio, Wabash, and White River Systems are all subject to high water and flooding.

In 1937, the Ohio River Valley flood came into the city itself. Before the 1937 flood there was high water on the lowlands near the river, inconveniencing farmers and those living near the river. In ordinary flood years, the river crested usually near 43.2 feet. In 1937, the river crested at 53.7 feet--10.5 feet above average. The Ohio River passed the flood stage of thirty-five feet on January 9 to the day it returned to its channel on February 20.

The flood came up slowly. People had ample time to move out of their homes to higher land, but they didn't at first. They did not believe this could happen in Evansville. Water began to back up through sewers, poured into basements, leaving houses surrounded by water. Cars wouldn't run; they were left stranded on the streets, and people had to leave their homes by using Red Cross relief boats. The water rose. Only roofs of cars could be seen and chairs, tables, couches and books were floating down the streets.

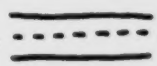
No one was drowned. Many had to leave in a hurry from their homes. Many people lost much of their personal property and spent weeks as refugees in temporary quarters.

The "Great Flood" of 1937 caused enormous damage, loss of property, the curtailment of utility services, mobilization of relief units such as the Red Cross, a city under martial law, and the expense of restoring the city after the fall of the water to a normal stage.

LEARNING ABOUT MAPS

A map is a drawing of all or part of the earth as you would see it from above. A map shows where things are located, but is smaller than a real place.

SYMBOLS, MAP KEY (LEGEND)

On a map, there are symbols that are drawings that stand for things that a map shows. They can represent natural things that are part of the earth or things that have been made by people. The map key shows the symbols used on a map and tells what the symbol means, e.g.  road.

Countries and states must have laws or rules for people to live by. The city in a country or state where these laws are made is called a capital.

On political maps, capitals are usually marked with a special symbol, like ⊛. Other cities are usually marked by a heavy dot, like • .

USING A MAP KEY

Directions: Look at this map and map key. You will see Indiana and the states that surround it.

Find rivers on the map key on the map and color them blue. Find state capitals on the key on the map, and put a red box around them. Draw green lines around the other cities. Put a brown X where the Mississippi River and the Ohio River meet.

Answer the following questions.

1. What direction does the Wabash River flow? _____
2. Name 3 cities that are on the Ohio River. _____

   _____
3. What direction is Michigan from Indiana? _____
4. The Mississippi River is the _____border of Illinois.
5. Name 3 states that have the Ohio River as their southern border.

   _____
6. Name one state where the Ohio River forms its northern border.

   _____
7. Name of Capitals of Michigan, _____; Illinois _____

   _____; Indiana, _____; Kentucky _____

   _____; Ohio, _____

DIRECTIONS

Maps use directions to help you find your way. North, south, east, west are directional words. Most maps have a direction finder to help you locate places and things. North (N) is the direction toward the top of the map. South (S) is the direction toward the bottom of the map, opposite of North. East (E) is the direction toward the right of the map. West (W) is the direction toward the left of the map, the opposite of East.

However, sometimes a place is not exactly north or exactly east. It may be toward the south and toward the west. Southwest is the in-between direction word that describes where the place is. The other in-between direction words are northwest, northeast, southeast.

MAPS—USING WHAT YOU HAVE LEARNED

MAP KEY

Look at the map and the map key above. Then read each sentence below. Circle the right direction to complete each one.

1. KENTUCKY is ____ of OHIO. N NE S SE E NW W SW
2. ILLINOIS is ____ of OHIO. N NE S SE E NW W SW
3. INDIANA is ____ of KENTUCKY. N NE S SE E NW W SW
4. OHIO is ____ of INDIANA. N NE S SE E NW W SW

Circle the right word to answer each question below.

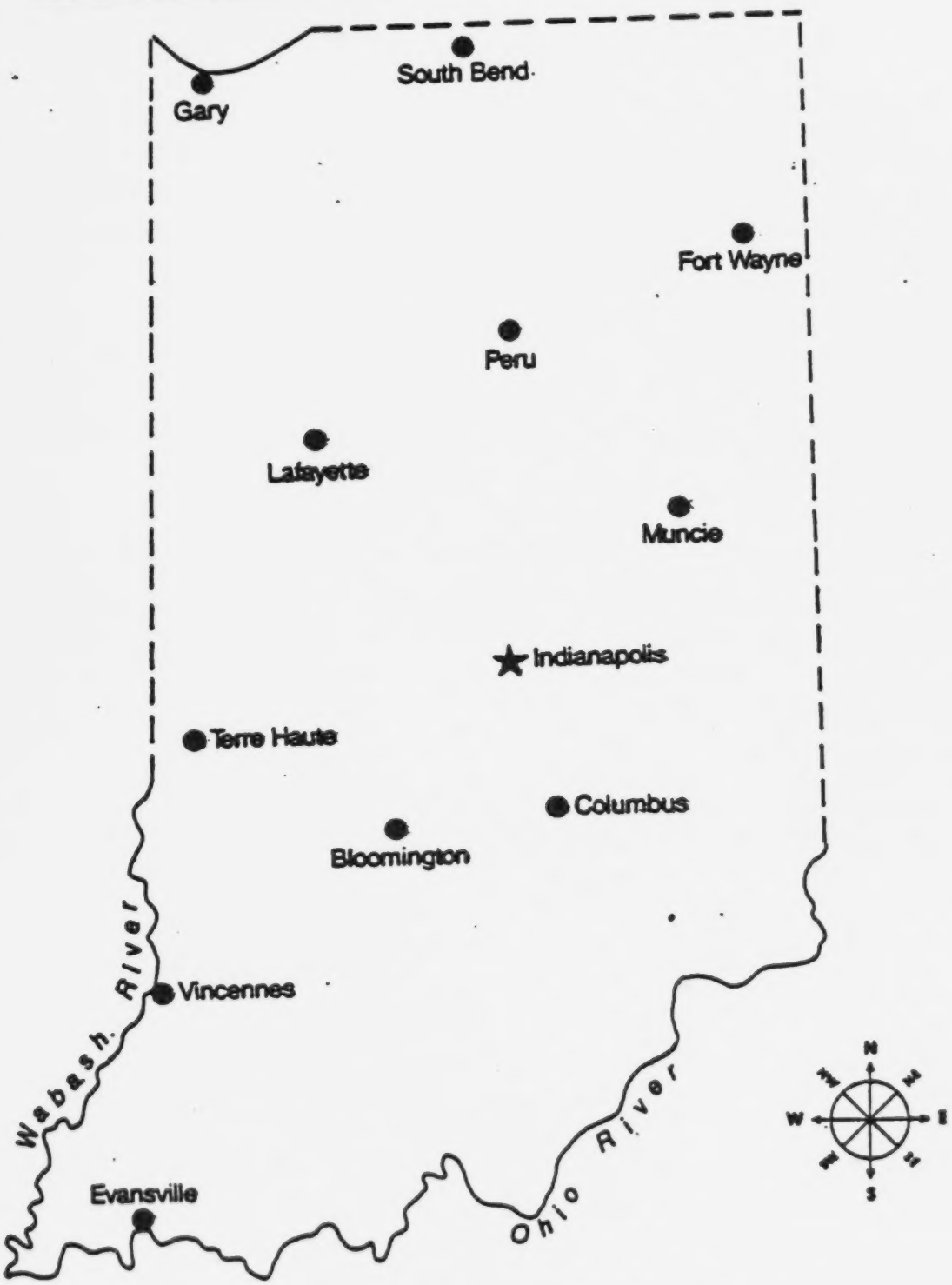
5. What is the west boundary of ILLINOIS?
   mountain river lake
6. What is the north boundary of KENTUCKY?
   mountain river lake
7. What is the east part of OHIO like?
   hilly flat empty

Follow these directions.

8. The boundary lines on the map are dotted. Trace them with a black line. Then make each state a different color.
9. Color the two rivers blue.

Name _____

Indiana Directions, Part 1



DIRECTIONS

1. _____ are north of Evansville.
2. _____ is the capital of Indiana.
3. Terre Haute is in the _____ part of Indiana.
4. South Bend is in the _____part.
5. Columbus is _____ of Vincennes.
6. Peru is _____ of Ft. Wayne.
7. Peru is _____ of Muncie
8. Bloomington is _____ of Indianapolis.
9. Columbus is _____ of Lafayette.
10. The _____ is the southern boundary of Indiana.

POLITICAL MAPS

A nation or a country is a place where all the people live under the same government. A country may be made up of smaller areas called states. The United States is made up of 50 states.

A boundary marks the place where one state or country ends and another state begins. The boundary line between states is usually shown as a dotted line. A natural boundary is part of the earth and could be shown as a river, lake, or ocean. A political map then shows the states and their boundary lines or shows different countries and their boundaries.

POLITICAL MAPS—IDENTIFYING STATES

Political Maps

Answer the following questions.

1. Name the state that is farthest northwest. _____
2. Name the state that is farthest northeast. _____
3. What state is a series of islands? _____
4. What state is a peninsula? _____
5. What is the largest state? _____
6. Which direction do you go from Indiana to Oklahoma? _____
7. Which direction do you go from Indiana to Georgia? _____
8. Name the state in which the Ohio River begins. _____
9. The Mississippi River flows into the Gulf of Mexico at what state?

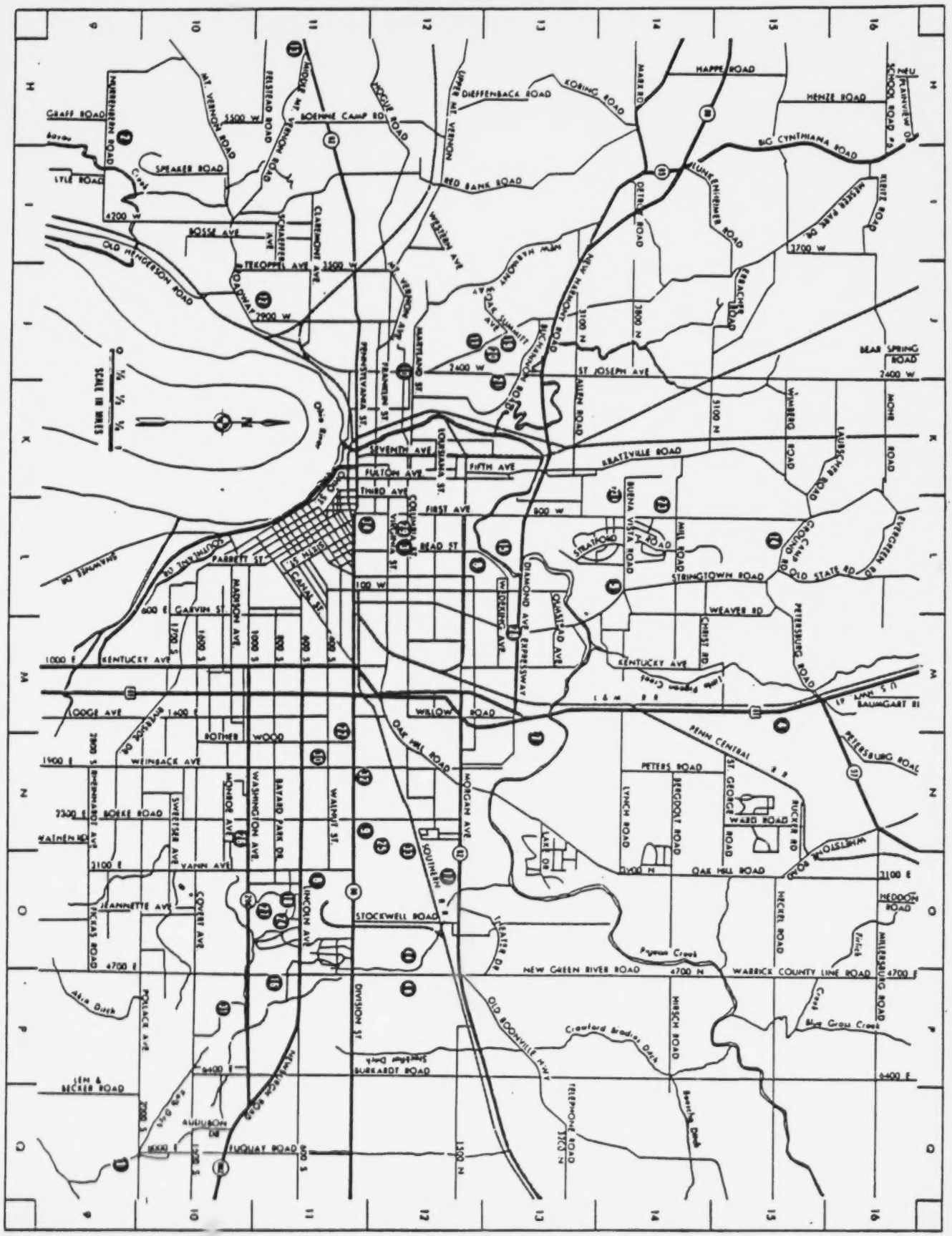
_____

10. Name the state that is farthest west from Indiana. _____

MAP GRIDS

Road maps show you how to get from one place to another. Most road maps have a grid. The grid divides the map into small spaces. Letters name the spaces from top to bottom. Numbers name the spaces from side to side. You can find any space by putting the letter and number together.

EVANSVILLE, INDIANA



Angel Mounds State Memorial, Outer Pollack Avenue
Burdette Park, Nurrenbern Road
Deaconess Hospital, 600 Mary Street
Dress Regional Airport, U.S. Highway 41N
Eastland Mall, 800 N. Green River Road
Eastland Place Shopping Center
Evansville Country Club, 3810 Stringtown Road
Evansville State Hospital, Lincoln and Vann Avenue
Fendrich Golf Course, 1900 Diamond Avenue
Garvin Park-Bosse Field
Hartke-Olympic Pool, 2600 Division Street
Helfrich Field, Maryland and Wessel Lane
Helfrich Golf Course, 1500 Mesker Park Drive
Howell Park, Barker Avenue
University of Southern Indiana, Highway 62
Iglehart Park, 1st Avenue and Camp Ground Road
Kleymeyer Park, 1st Avenue and Avon Avenue
Lawndale Shopping Center, 700 S. Green River Road
McDonald Golf Course, Morgan Avenue
Medical Arts Building, 3700 Bellemeade Avenue
Mesker Memorial Amphitheater, Mesker Park Drive
Mesker Park, Mesker Park Drive
Mesker Zoo, Outer St. Joseph Avenue
National Guard Armory, 201 S. Rotherwood Avenue
North Park Shopping Center, N. 1st Avenue
North Brook Shopping Center, N. 1st Avenue
Rehabilitation Center, 3701 Bellemeade Avenue
Roberts Municipal Stadium, 2600 Division Street
Ross Shopping Center, 1020 S. Boeke Road
St. Mary's Hospital, 3700 Washington Avenue
Town Center, 2312 Stringtown Road
Tri-State Medical Center, 715 1st Avenue
University of Evansville, 1800 Lincoln Avenue
Washington Square Mall, 5011 Washington Avenue
Weinbach Center, 1 N. Weinbach Avenue
Wesselman Park, 551 N. Boeke Road
Willard Library, 21 1st Avenue

Find the grid locations for the following places.

1. Angel Mounds _____
2. Eastland Mall _____
3. University of Southern Indiana _____
4. Mesker Zoo _____
5. Roberts Municipal Stadium _____
6. St. Mary's Hospital _____
7. Willard Library _____
8. Evansville Country Club _____
9. Fendrich Golf Course _____
10. Deaconess Hospital _____

Answer the following questions.

1. What road is at H-10? _____
2. What highway is at M-15? _____
3. What road begins at P-11? _____
4. What body of water is at K-11? _____
5. What road is at N-15? _____

ANSWER KEY

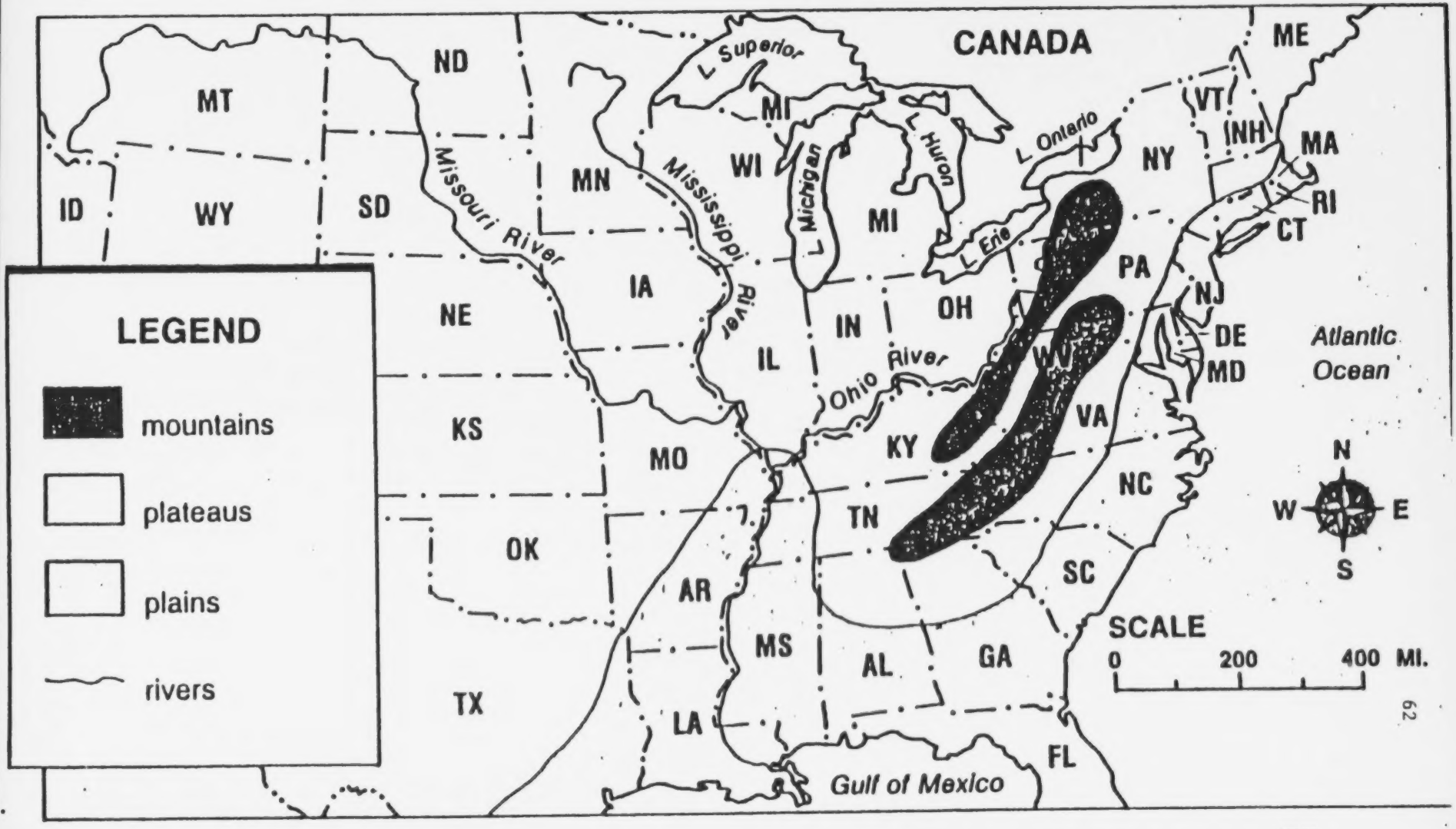
Angel Mounds State Memorial, Outer Pollack Avenue	Q-9
Burdette Park, Nurrenbern Road	H-9
Deaconess Hospital, 600 Mary Street	L-12
Dress Regional Airport, U.S. Highway 41N	M-15
Eastland Mall, 800 N. Green River Road	O-12
Eastland Place Shopping Center	P-12
Evansville Country Club, 3810 Stringtown Road	L-14
Evansville State Hospital, Lincoln and Vann Avenue	O-11
Fendrich Golf Course, 1900 Diamond Avenue	N-13
Garvin Park-Bosse Field	L-12
Hartke-Olympic Pool, 2600 Division Street	N-11
Helfrich Field, Maryland and Wessel Lane	J-12
Helfrich Golf Course, 1500 Mesker Park Drive	J-12
Howell Park, Barker Avenue	J-11
University of Southern Indiana, Highway 62	H-11
Iglehart Park, 1st Avenue and Camp Ground Road	L-15
Kleymeyer Park, 1st Avenue and Avon Avenue	L-13
Lawndale Shopping Center, 700 S. Green River Road	P-11
McDonald Golf Course, Morgan Avenue	O-12
Medical Arts Building, 3700 Bellemeade Avenue	O-11
Mesker Memorial Amphitheater, Mesker Park Drive	J-13
Mesker Park, Mesker Park Drive	J-13
Mesker Zoo, Outer St. Joseph Avenue	J-13
National Guard Armory, 201 S. Rotherwood Avenue	M-11
North Park Shopping Center, N. 1st Avenue	L-14
North Brook Shopping Center, N. 1st Avenue	L-14
Rehabilitation Center, 3701 Bellemeade Avenue	O-11
Roberts Municipal Stadium, 2600 Division Street	N-10
Ross Shopping Center, 1020 S. Boeke Road	N-10
St. Mary's Hospital, 3700 Washington Avenue	O-11
Town Center, 2312 Stringtown Road	M-13
Tri-State Medical Center, 715 1st Avenue	L-12
University of Evansville, 1800 Lincoln Avenue	N-11
Washington Square Mall, 5011 Washington Avenue	P-11
Weinbach Center, 1 N. Weinbach Avenue	N-11
Wesselman Park, 551 N. Boeke Road	O-12
Willard Library, 21 1st Avenue	L-11

PHYSICAL MAPS

Physical maps can show how high or low places are. The map key helps you understand the map by telling you which places are the highest in elevation down to the lowest elevation.

These maps also show the natural features of a place, such as oceans, rivers and lakes.

THREE LONG RIVERS OF THE UNITED STATES



SCALE

Maps use scale to show distances. A small distance on a map is usually equal to a much larger distance on the ground.

A bar scale, a kind of ruler used to measure distance, will tell you the distances they show. Place the edge of a piece of paper below the bar scale. Make the mile lines on the paper. Then use the paper to measure distances on a map.

A ruler can be used to find map scale, for instance, 1 in. = 1 mile.

PHYSICAL MAP

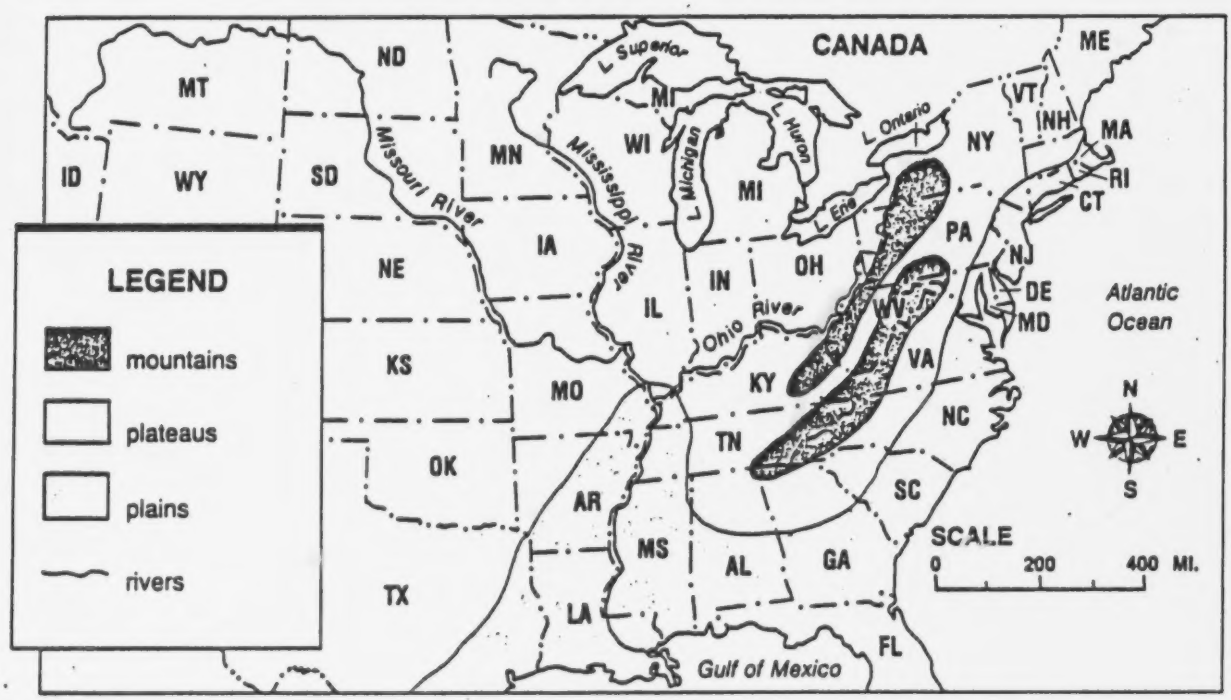
A legend is also a map key.

1. Measure the length of the Mississippi River. _____
2. Measure the length of the Ohio River. _____
3. Does Tennessee have any mountain areas? _____
4. Florida land is called _____
5. Indiana land is called _____
6. Name the 2 rivers that are branches of the Mississippi River.

   _____
7. Imagine you are taking a boat trip all the way down the Mississippi River. You start in the far north, where the river begins. How many states that border the river will you pass? _____

This map shows the Mississippi River and two of its branches. The branches flow into the Mississippi River. Use the map to answer the questions below it.

THREE LONG RIVERS OF THE UNITED STATES



1. Name the two rivers on the map that are branches of the Mississippi River.

   _____ _____

2. Name three states that border the Ohio River (Any three are acceptable).

   _____, _____, _____

3. Name two states that have the Missouri River as part of their border. (Any two are acceptable.) _____,

   _____.

4. Imagine you are taking a boat trip all the way down the Mississippi River. You start in the far north, where the river begins. How many states that border the river will you pass? _____

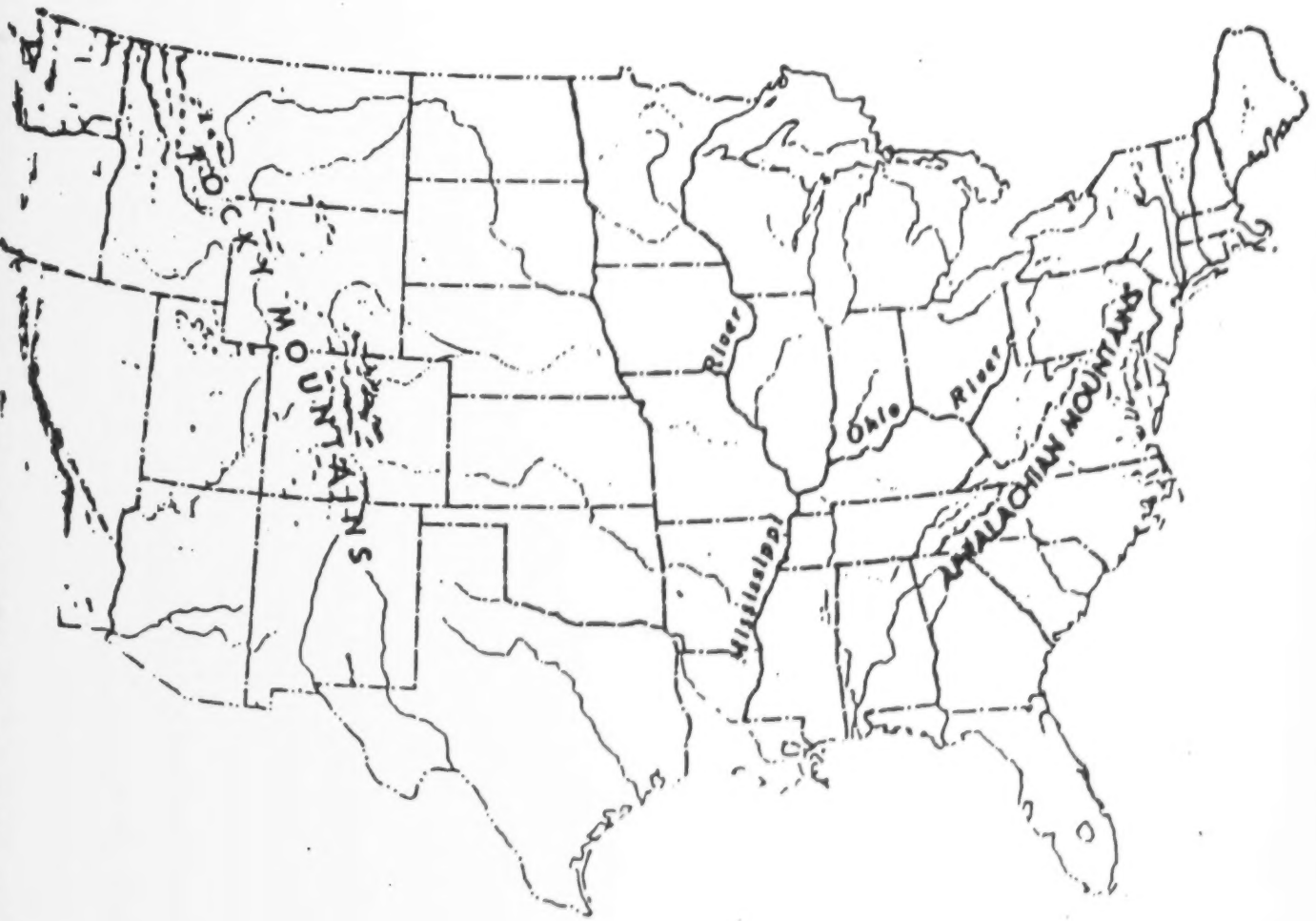
Write in the names of the states on which the Ohio River is a border.

Color the path of the Ohio River blue.

Color the path of the Mississippi River green.

Locate New Orleans, Cincinnati, Louisville, Evansville, and Cairo. Underline them with a brown crayon.

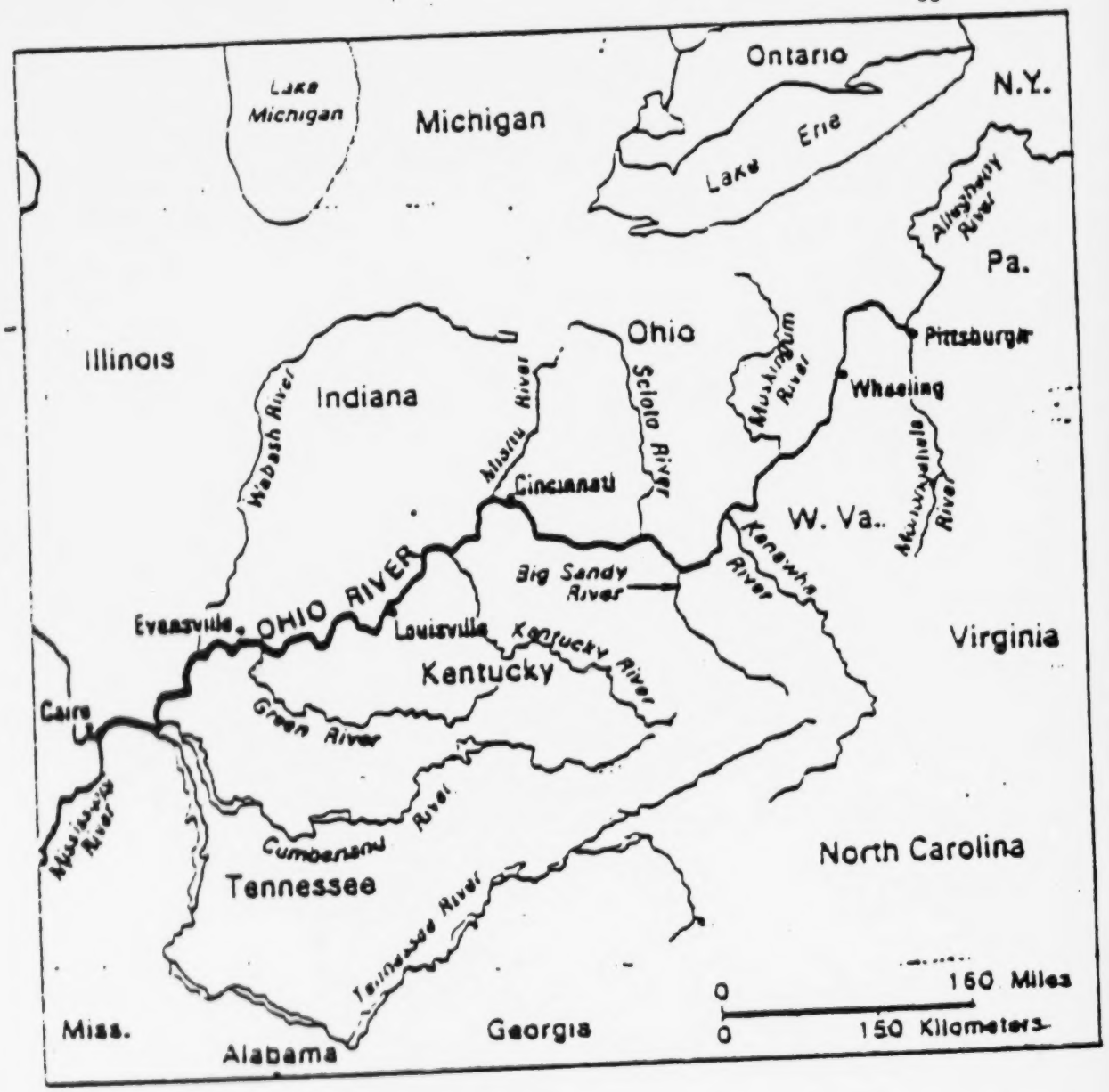
Put a black X on the Mississippi River delta.



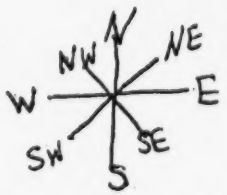
MISSISSIPPI DRAINAGE BASIN

The Mississippi River system drains almost two thirds of the contiguous United States. Where the Ohio River joins the Mississippi, the river doubles the amount of water it carries. Other major tributaries of the Mississippi are the Illinois, the Missouri, the Arkansas, and the Red rivers.

PACIFIC OCEAN
Great Salt Lake
Missouri River
The Great Lakes
Mississippi River
Ohio River
Pittsburgh, Pa.
Wheeling, West Va.
Cincinnati, Ohio
Louisville, Ky.
Evansville, In.
Cairo, Ill.
ATLANTIC OCEAN
Colorado River
Arkansas River
Rio Grande
New Orleans, La.
MAP KEY
ocean
lake
river
N
NW
NE
W
E
SW
SE
S



Location of the Ohio River



MAP READING

1. The source of the Ohio River is at _____
2. The mouth of the Ohio River is at _____
3. The city of _____ is on the Ohio River.
4. The _____ River flows into the Ohio River.
5. The Ohio River is formed by the joining of the _____ and _____ Rivers.
6. The Wabash River is _____ of Evansville.
7. Louisville is _____ of Evansville.
8. The Ohio River flows _____.
9. The Cumberland and Tennessee Rivers flow _____ into the Ohio River.
10. Cairo is _____ of Evansville.

MAP STUDY

1. Name the 2 rivers that flow into the Mississippi River.

   _____

2. New Orleans is located on _____

3. The mouth of the Mississippi River is at _____

4. The Ohio River begins in _____

5. Name 5 states on the Gulf of Mexico. _____

   _____

WHERE CITIES ARE BUILT

Cities begin and develop for many reasons. One of the main reasons is the location. Cities are often started near large bodies of water where goods can be shipped in and out. Other cities have grown because there was good transportation by rivers, roads, or railways. Before electricity was used to run machines, mills or factories were built near swift streams or waterfalls because machines were run by moving water. Some cities have grown in areas where natural resources could be found. Factories need such natural resources as coal, iron ore, trees, and oil.

Answer Yes or No

1. Evansville is a large city located on a river. Do you think the river helped Evansville grow? _____
2. The city of Miami is located in the warm, healthful climate of Florida. Did the climate have anything to do with Miami's growth? _____
3. Do you think a town that has no good roads leading to it is likely to grow into a large city? _____
4. Do factories have to be built near waterfalls or swift streams today? _____
5. Are natural resources important to factories? _____
6. The city of Pittsburgh is located near iron ore mines. Do you think Pittsburgh is a great steelmaking center? _____
7. Do you think a city would be built where no food could be raised or where no drinking water could be found? _____
8. Are cities usually started by people who come to do work of some kind? _____
9. Do you think there were large cities in the world two thousand years ago? _____
10. Do you think Evansville would have grown as large as it has if it had not been on a river? _____

Place an X by the things that may help a town grow into a city.

1. good roads
2. pretty flowers
3. large river
4. railroads
5. factories
6. many insects
7. good harbor
8. good soil
9. cold weather
10. natural resources
11. pleasant climate
12. few jobs

Test

1. What river is the southern border of Indiana? _____

2. In what part of Indiana did the first settlers live? _____
   Why? _____

3. How did settlers get to the Ohio River? _____
   _____

4. How were keel boats and steam boats better than flat boats and rafts? _____

5. What river does the Ohio River empty into and is a tributary of?
   _____

Match

1. source	_____	a.	the place where a river ends.
2. downstream	_____	b.	where river flows into larger river.
3. mouth	_____	c.	the place where a river begins.
4. channel	_____	d.	movement of water.
5. current	_____	e.	a body of water found on land.
6. tributary	_____	f.	river's flow downhill toward mouth.
7. river	_____	g.	path of river.

Name 3 ways people use the Ohio River.

A. _____

B. _____

C. _____

2. Does a river's current flow upstream or downstream? _____

3. What is a stream or river called if it flows into another stream or river? _____

4. What is it called if it flows out of, or overflows the stream or river? _____

5. Is the source of a river on highland or lowland? _____

LET'S CELEBRATE LANGUAGE ARTS!

The following sentences concern the Ohio River. Some sentences are statements, commands, questions and exclamations. If you don't remember these terms, review them before going any farther.

Read each sentence. Decide what type of sentence each one is. Place the proper punctuation at the end of each sentence. Then on the line after the sentence, place S for statements, C for commands, Q for questions and E for exclamations. The first one is done for you.

1. Do you know where the Ohio River is located ? Q
2. Wow, Thunder on the Ohio is exciting __ __
3. Don't swim alone in the river __ __
4. Evansville is located on the Ohio River __ __
5. Our riverfront is beautiful __ __
6. Does the Ohio River flow north or south __ __
7. Keep our river clean __ __
8. Gravel and sand are taken from the Ohio River bottom __ __
9. The Ohio River is a habitat for many types of wildlife __ __
10. Can you name three types of fish found in our river __ __

The following groups of words concern rivers. Some are sentences and some are fragments. A sentence is a group of words with a subject and predicate and makes a complete thought. A group of words that does not have these is a fragment. Put S on the line after the groups of words that are sentences and F after groups of words that are fragments.

1. Flowing to the Mississippi River ___
2. A complete network of rivers ___
3. Dams and reservoirs assure cities of a water supply ___
4. Rain is a form of precipitation ___
5. Evansville's water comes from the Ohio ___
6. Then the treated water ___
7. Ice once covered Indiana ___
8. Where the Ohio River begins ___
9. Keep the river clean from pollution ___
10. Creating Indiana's southern boundary ___

Each of the following sentences concerns water and the Ohio River. These statements are all true.

The subject of a sentence is the people, place or thing that the sentence is about. The verb tells what the subject is doing. Underline the subject once and the verb twice. The first one is done for you.

1. The Ohio River flows into the Mississippi River.
2. Many people live in Pittsburgh where the Ohio starts.
3. The Alleghany and Monongahela rivers form the Ohio River.
4. Flatboats move more easily downstream with the current.
5. The water cycle explains precipitation or rain.
6. Evaporation is the loss of water from the earth's surface.
7. Cities developed on some large rivers.
8. The Ohio River creates the southern border or boundary of Indiana.
9. Evansville depends heavily on the river.
10. The Ohio River offers us a good means of transportation.

The following sentences concern the Ohio River. Each sentence has an action verb. Read each sentence and underline the action verb. The first one is done for you.

1. The Ohio River flows by the city of Evansville.
2. Our river empties into the Mississippi River.
3. This river provides us with our drinking water.
4. Steamboats once traveled up and down the Ohio.
5. Indians lived along the banks of the river.
6. The water cycle describes the evaporation, condensation, and precipitation of the earth's water.
7. Many large cities grew along the Ohio River.
8. Rivers like the Ohio offer wonderful summertime recreation.
9. Pollution causes problems for river wildlife.
10. Water returns to the earth's surface as a form of precipitation.

Read the following sentences about the Ohio River. Each of these statements is correct. In each sentence underline the nouns. Remember that a noun names a person, place or thing. You should underline 36 mouns. The first one is done for you.

1. The Ohio River flows along the southern boundary of Indiana.
2. A tributary is a stream that flows into a larger stream.
3. A complete network of rivers makes up a river system.
4. The source is the location where a river begins.
5. The end of a river's course is called the mouth.
6. Indians like the Shawnee and Iroquois lived along the river's banks.
7. Flatboats, keelboats and later steamboats were often seen on the river.
8. Deltas or islands of rich soil are often formed at a river's mouth.
9. Rivers flow downstream or away from the source of beginning.
10. Pollution threatens many rivers in our country.

Expansion by modification is a technique that helps you write better and more interesting sentences. By starting with a basic kernel sentence, you will be able to add some descriptive words or word groups and make better sentences. Look at the example.

Kernel Sentence: Hugh McGary incorporated the city of Evansville.

What kind: small
When: in 1847
Where: on the Ohio River
How: with great satisfaction

Result: In 1847 with great satisfaction Hugh McGary incorporated the small city of Evansville on the Ohio River.

Use this technique to write better sentences for the following.

1. Kernel Sentence: We use our river.
   What kind: _____
   When: _____
   Where: _____
   How: _____

   Result: _____

   _____

2. Kernel Sentence: Evansville depends on the river.
   What kind: _____
   When: _____
   Where: _____
   How: _____

   Result: _____

   _____

3. Kernel Sentence: Ice covered our state.
   What kind: _____
   When: _____
   Where: _____
   How: _____

   Result: _____

   _____

Movability is a technique whereby you are encouraged to write varied sentences by moving descriptive words or phrases to various positions in a sentence.

See the example below concerning the Ohio River and Hugh McGary.

Sentence: With great satisfaction Hugh McGary incorporated the small city of Evansville on the Ohio River.

1. On the Ohio River Hugh McGary, with great satisfaction, incorporated the small city of Evansville.

2. Hugh McGary, with great satisfaction, incorporated the small city of Evansville on the Ohio River.

Try using this technique to write two different sentences for the given sentence.

1. Water constantly moves through the water cycle all over the earth's surface.

   A. _____

   _____

   B. _____

   _____

2. Fortunately, Evansville has had a good supply of water coming from the Ohio River throughout the years.

   A. _____

   _____

   B. _____

   _____

The following is a prompt for creative writing. It is to be used after a discussion of the Ohio River, Hugh McGary and Evansville. The students are to pretend they are Hugh McGary and are to finish the story.

After coming down the Ohio River, I decided to locate my settlement at the bend of the river because...
(This sentence is the topic sentence and should be the first sentence of each student's writing.)

LET'S CELEBRATE MATHEMATICS!

The following story problems concern Hugh McGary and the Ohio River. Work the problems carefully.

1. Hugh McGary traps small game along the banks of the Ohio. On Tuesday he caught six rabbits; on Wednesday he caught three rabbits. How many rabbits did he catch altogether?

2. McGary cut nine logs for his cabin on Monday. He cut six logs on Tuesday. How many more did he cut on Monday than on Tuesday?

3. During the spring, McGary took his furs to a trading post. He traveled twelve miles the first day and eight miles the second day. How far did he travel in two days?

4. How many more miles did he travel on the first day than on the second?

5. From his cabin at the top of the hill, McGary had a good view of the river. In a week's time he saw four canoes, three flatboats and two keelboats. How many river craft did he see during the week?

6. Land had to be cleared before a field could be planted. McGary cut twelve trees on Friday. He was tired and only cut seven trees on Saturday. How many fewer did he cut on Saturday?

7. McGary cuts a cord* of wood in about seven days. How many days will it take him to cut three cords?

8. If it takes McGary two days to travel twenty miles, how many days will it take him to travel sixty miles?

* 1 cord = 128 cubic feet (4' x 4' x 8')

Name _____

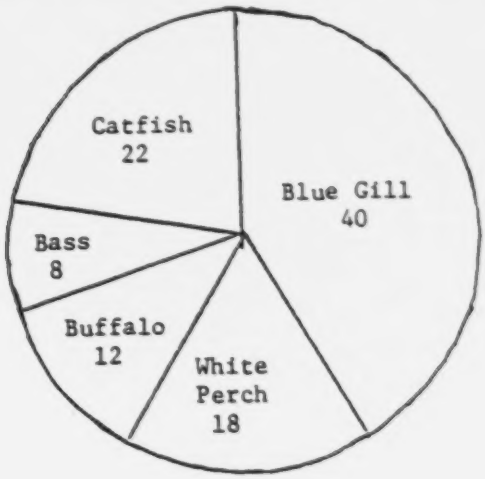
	Beech	Hickory	Oak	Poplar	Sycamore	Total Trees Found
Sue	6	2	4	7	5	24
Bill	3	0	7	4	5	19
Tony	4	4	6	2	1	17
Jane	2	5	1	0	6	14
Myron	3	4	5	2	1	15
Kim	8	3	2	4	5	22
Steve	6	7	3	6	4	26

Some children have identified different kinds of trees along the river's edge. Use the chart above to answer the following questions.

1. How many trees did Jane find? _____
2. Who found the most Oak trees? _____
3. Who identified a total of 22 trees? _____
4. Who found more Beech trees, Tony or Steve? _____
5. Did Myron find more Hickory or Sycamore trees? _____
6. Who identified the least number of trees? _____
7. Who identified the most trees? _____
8. How many Poplar trees did Tony find? _____
9. How many trees did Sue find? _____
10. What was the total number of trees found by all the children? _____

Name _____

NUMBER OF FISH CAUGHT IN AUGUST

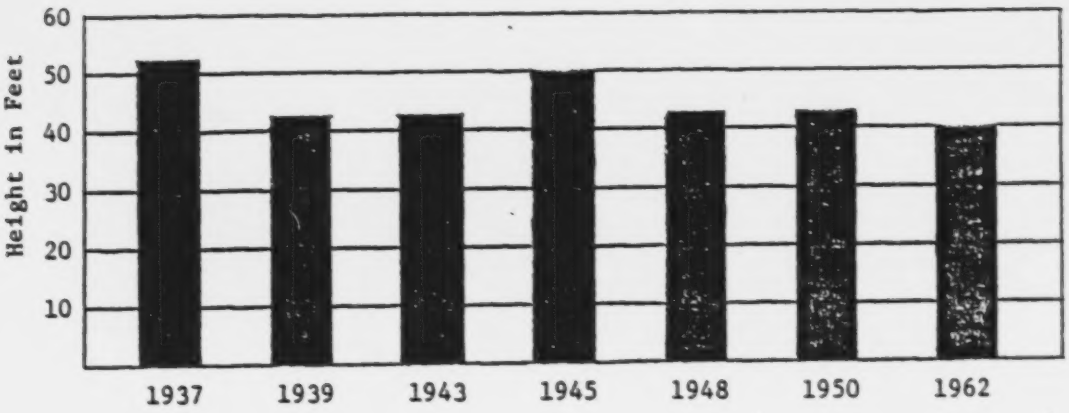


A local fisherman recorded the number of fish he caught in the Ohio River during the month of August. Use the circle graph to answer the questions.

1. What fish did he catch most often? _____
2. What fish did he catch the least? _____
3. Did he catch more White Perch or Buffalo? _____
4. Did he catch more Blue Gill or Catfish? _____
5. Did he catch more Buffalo or Bass? _____
6. Did he catch fewer Catfish or White Perch? _____
7. Did he catch fewer Blue Gill or Buffalo? _____
8. How many White Perch and Buffalo did he catch? _____
9. How many Bass and Catfish did he catch? _____
10. How many Buffalo, Bass, and Blue Gill did he catch? _____
11. The sum of which 2 kinds of fish equals the same number of Blue Gill? _____

Name _____

HIGHEST OHIO RIVER LEVELS FOR VARIOUS YEARS



1. What year was the river the highest? _____
2. What year was the river the lowest? _____
3. In what years did the river reach the same level as 1943? _____

_____

4. In what years was the river level less than 1945? _____

_____

5. In what year was the river level more than 1945? _____
6. How much higher was the river level in 1945 than 1962? _____
7. How much lower was the river level in 1962 than 1937? _____
8. What years did the river reach 50 feet or more? _____
9. Can you tell from the graph what the river level was in 1935? _____
10. In which year did the "Great Flood" occur? _____

Name _____

RECREATIONAL USES OF THE OHIO RIVER

Ask 20 people their favorite river activity and tally their answers. Remember, the fifth tally mark crosses over (1111). Then make your own bar graph. Color in the number of foxes to equal the number of tally marks for each activity.

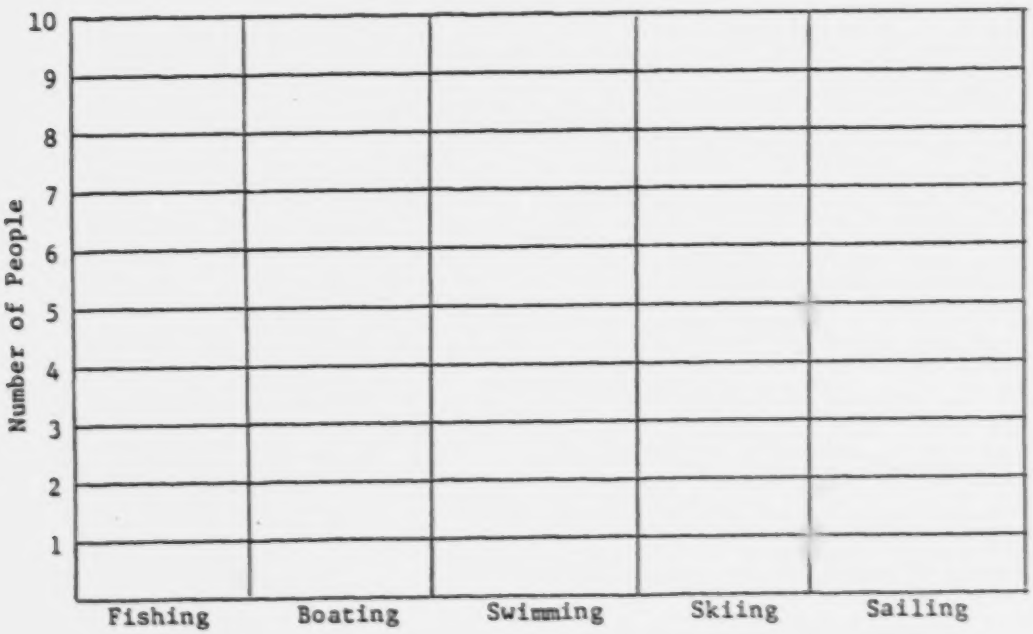
Fishing _____

Swimming _____

Sailing _____

Boating _____

Skiing _____



The following story problems concern Hugh McGary and the Ohio River.

Work the problems carefully.

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8. If it takes McGary two days to travel twenty miles, how many days will it take him to travel sixty miles?

*1 cord = 128 cubic feet (4' x 4' x 8')

The following story problems concern the Ohio River. Work the problems carefully.

1. Traveling by river, Newburgh is ten miles from Evansville. Owensboro is thirty-five miles. From Evansville how much further is Owensboro than Newburgh?

2. If in 1976 the coast guard registered 125 boats and in 1986 it registered 465, how many more were registered in 1986 than in 1976?

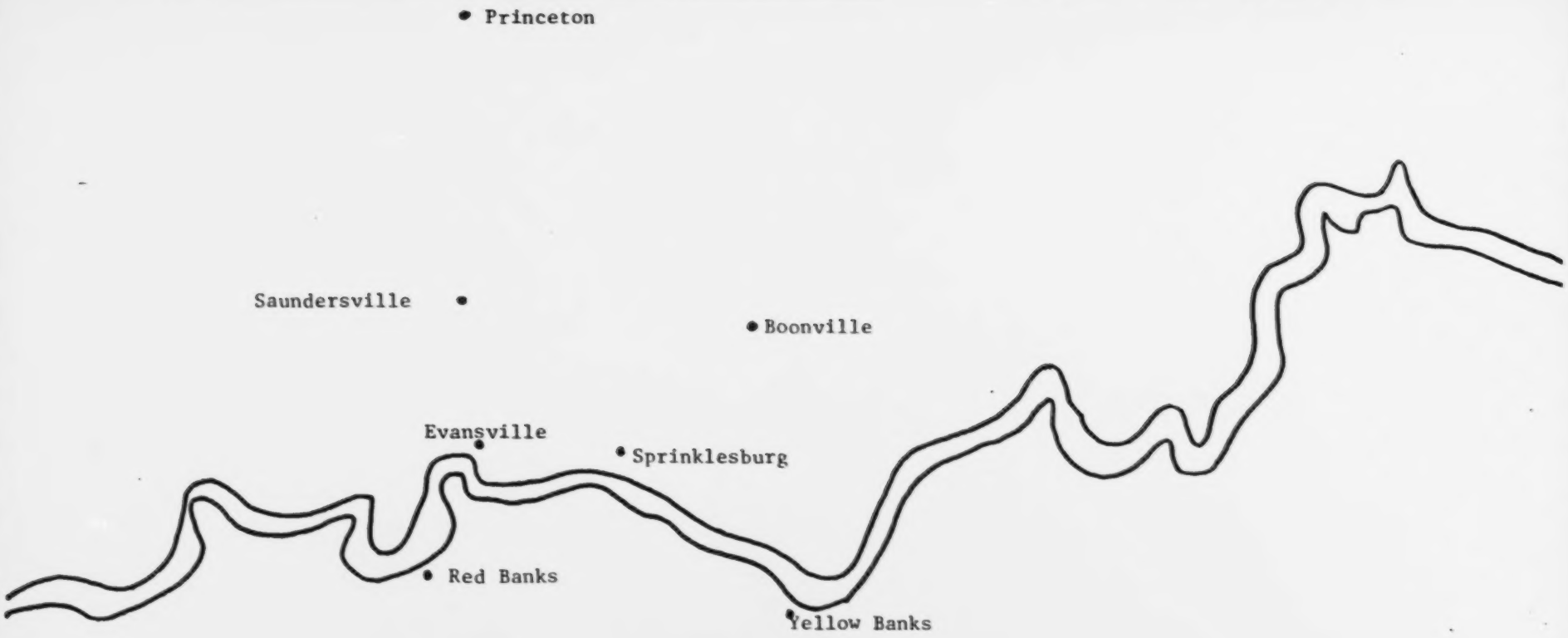
3. During the 1937 flood, the river rose above the flood stage of 35 feet on January 9. The river crested at 54 feet above flood stage in February. How many feet above flood stage did the river rise?

4. The Ohio River provides much of the gravel used in southern Indiana. In one year, 290 tons of gravel were removed from the river's bottom. In the following year, 368 tons were removed. How many more tons were removed in the second year than in the first?

5. What was the total tonage of gravel removed in both of the above years?

6. The average water temperature of the Ohio River is 34° in January and 80° in June. Which month has the lowest average temperature? How much lower?

Name _____ SCALE: 1 inch = 10 miles



1. What is the distance from Evansville to Red Banks? _____
2. What is the distance from Evansville to Princeton? _____
3. What is the distance from Evansville to Sprinklesburg? _____
4. What is the distance from Red Banks to Yellow Banks overland? _____
5. What is the distance from Red Banks to Yellow Banks by river? (Use yarn) _____
6. Is the distance shorter from Red Banks to Yellow Bank overland or by river? _____
7. If you can travel 10 miles in one day, what cities could you reach from Evansville in a day's travel? _____
8. Which is closer to Yellow Banks, Red Banks or Sprinklesburg? _____
   How much closer? _____

90

The following story problems concern the early pioneers who settled along the Ohio River. Work them carefully.

1. Settler Schmidt built his cabin along the Ohio River. He needed to clear the land for his garden. If he could clear away three trees in one day, how many trees could he clear in five days?

2. It takes Schmidt 4 minutes to plow a short row. How many minutes will it take him to plow eight rows?

3. It takes twelve corn seeds to fill a row. How many seeds will Schmidt need to fill eight rows?

4. Schmidt's corn has grown through the summer months. It is ready for harvest. He gets three ears to a stalk. How many ears will he get from a row of twelve plants?

5. Settler Schmidt's son is husking corn. He can husk three ears in a minute. How many ears could he husk in eleven minutes?

6. After Schmidt has the corn ground into meal, his wife uses it to make corn muffins. She can bake six muffins at a time. If she makes eight batches of muffins, how many muffins will she have?

7. The Schmidt's are having five people over for dinner. The Schmidts have five children. If each person eats two muffins, how many muffins will his wife bake?

8. How many <u>batches</u> of muffins will his wife need to bake?

LET'S CELEBRATE SCIENCE!

WATER IS A NATURAL RESOURCE

Most of the earth is covered with water. Water is found in oceans, rivers, lakes, and ponds. Water can be found in the ground. Some places have water found as large pieces of ice. No matter where it is found, water is an important natural resource.

Plants and animals need a good supply of water to live. The amount of water on the earth remains constant. But people must respect our needs for water and use water carefully. Water is one of the earth's two most important substances.

Much of the earth's water supply is locked in ice caps and glaciers. There is enough water available for each person on the earth to have a million gallons of water each year. However, some areas do not have enough water because of uneven distribution. Places near the equator usually get enough rain, but areas further north or south may not get enough rain.

Another problem with our water supply is pollution. Sometimes water is available, but it has been made unusable by the disposal of wastes from homes and factories. One person out of five living in a city does not have safe water to drink.

Not too long ago Lake Erie was considered a "dead" lake. Factories along the shore had dumped so much waste into the lake that the fish were poisoned. This made the lake unfit for drinking and swimming. Laws were passed to keep factories from polluting our water supplies.

Water pollution can be stopped if people stop adding wastes to our water. The Ohio River has many factories along its banks. It is important that all cities along the river dispose of their waste properly because

the water in a river does not stay in one place. It flows downstream from one city to the next. Wastes from cities northeast of Evansville could cause problems for Evansville's water supply.

Towns and cities are building sewers to keep wastes from going into the river. The waste water goes to a special plant called a sewage treatment plant. At this plant, the water goes through a filtering process, and chemicals are added to purify the water before it is returned to the river. This is to protect the plant and animal life that exists in the river.

WATER AS A NATURAL RESOURCE ACTIVITIES

1. Visit the Ohio River and look for signs of pollution.

2. Take a field trip to the waterworks.

3. Take a field trip to the sewage treatment plant.

4. Find out the laws regarding waste disposal in Evansville.

WATER SOURCES

Where do people get the water that they use? Regardless of where people live, water for industrial and personal use comes from one of these three sources: groundwater, rivers, or lakes.

Rivers are not always a very dependable source of water. When it rains, the rivers are full. When drought exists, the rivers become low. In order to make sure that water is always available, the government builds dams and reservoirs. A system of pipes and aqueducts is used to carry the water to other reservoirs, and the pumping stations feed the water into the city water systems. An aqueduct is a man-made channel which carries water.

In Evansville our water supply comes from the Ohio River; however, water from rivers must be treated before it is safe to drink or use.

Water treatment takes place in several stages. First, the water is mixed with a chemical. Then bacteria, mud, and other waste collect around the chemical. Once mixed the water is moved to a large tank where the wastes and chemicals sink to the bottom. The purer water at the top of the tank is moved through a filter. This filter is usually a layer of sand over a layer of coarser gravel. The filter strains out more impurities. Now the water is placed in another storage area where special disease-killing chemicals are added. Once the water has been treated, it is ready for use.

LET'S PURIFY WATER

Fill one jar with tap water and another with muddy water. Stir both jars. Next let the jars stand.

Notice that the tap water does not change at all. However, the muddy water has bits of soil that fall to the bottom of the jar. This is called settling.

Place a paper coffee filter into a funnel and pour some sand into the filter. Put this funnel into a clean jar.

Carefully pour the muddy water into the funnel. Watch the water that drips through the filter. Does filtering help to purify water?

Now compare the filtered water to the tap water. Which one would you rather drink? Why?

WATER USE ACTIVITY

Find some jars and put water in each of them. Now put different objects inside the jars.

Cover the jars. Put them in a warm place and let them stand for three days.

How does the water look?

Does the water smell good?

Would you want to drink this water?

WATER USES

How many ways do you use clean water? Make a list of the things that you do with clean water.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

ARE THERE SOLIDS IN WATER?

We know that the air we breathe may have bits of solids in it. But are there solids in the water we drink?

Place some tap water into a pie pan. Put the pan in a warm place. Watch what happens to the water. The water becomes vapor. It evaporates. Look at the bottom of your pan. Are there any solids in the pan?

The solids in the pan are called minerals. They were there all the time but you couldn't see them. They were dissolved in the water.

Now scrape off some of the minerals and stir them into a glass of water. Do you think the minerals will dissolve?

We can't see the solids in the water we drink. But we found out that there are solids in that water. Do you think that there could be other things in our water that are too small to see?

WATER HABITATS

A habitat is the particular environment or "address" of an organism. The Ohio River is the habitat of many organisms. There are tiny microscopic organisms as well as larger plants and animal that have the river as their habitat.

Pretend that we are visiting the river. We will see many plants and animals there. There are frogs sitting on a fallen tree trunk. Some ducks are swimming in the river. A turtle is sunning itself. A dragonfly is flying overhead. Cattails are growing all along the river bank. Different kinds of fish are swimming below the water's surface. Many small fish and plants are abundant in the river.

These organisms find everything that they need to live in this environment. They are well suited to their habitat.

WATER HABITAT ACTIVITY

Many animals live in or around the river. Choose one animal and find out how it is fitted for life in the river environment.

Here is an example of this exercise.

The crayfish lives in a water habitat. It is fitted to walk with legs. It catches its food with its claws. It eats tadpoles, small fish, small insects and snails. They all live in that habitat. The crayfish has gills that take air from the water in which it lives.

WATER HABITAT ACTIVITY

Collect a small sample of water from the river.

Look at the sample with your eyes, with a magnifying lens, and, if possible, with a microscope.

Write down what you see.

1. _____

_____

2. _____

_____

3. _____

_____

FITNESS TO LIVE IN THE RIVER

How is a fish fitted for life in the river? Tell three ways.

1. _____

2. _____

3. _____

Did you tell how the fish gets the air it needs?

Did you say how it moves?

How does the fish protect iteself from enemies?

Could the fish live in another habitat?

FOOD CHAINS

We know that living things need food for energy. We need food to live. We also know that plants use energy from the sun to make food.

How is that stored food in plants used by animals? Think about a grasshopper eating a blade of grass. That grasshopper is using the stored food in the plant for energy. Extra food is stored in the grasshopper's body. Perhaps a frog eats that grasshopper. The frog uses some of the food for energy. The frog might be eaten by a fish. Later, a man might catch that fish and eat it.

This process of stored food moving from one living thing to another is called a food chain. A food chain links living things together that depend on one another.

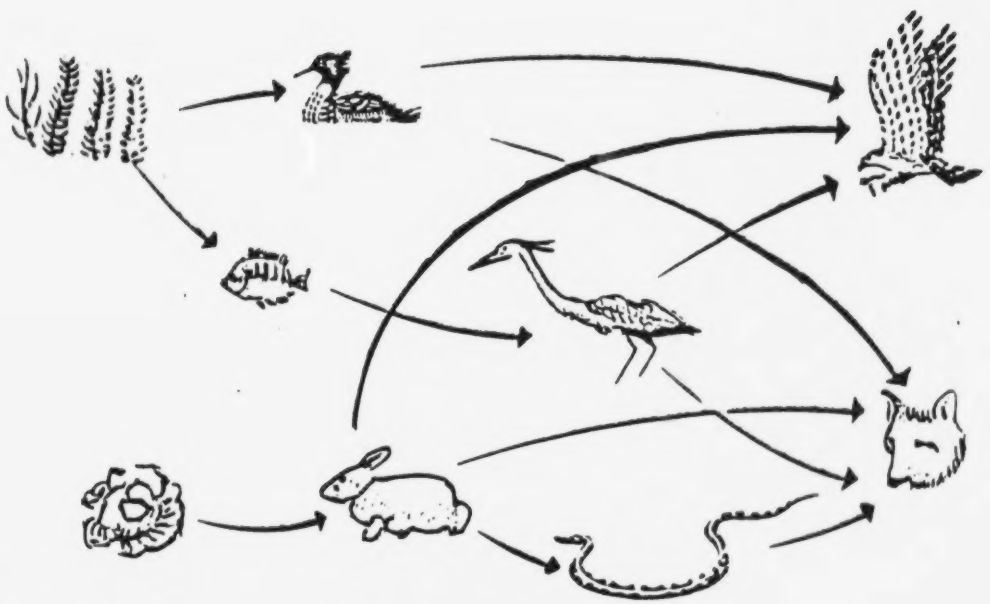
A food chain always begins with a green plant. It is called the producer. An animal, called a consumer, eats that plant. This first consumer is often a herbivore or plant eater. Later another consumer may eat that herbivore. The second consumer may be either a carnivore, meat eater, or an omnivore, plant and animal eater.

A food chain can take many directions after the beginning with a green plant. A mouse might eat some seeds. Then there are many different animals that might eat that mouse.

Separate food chains can be put together, and they are called a food web. A food web is made up of all the food chains in one particular place.

FOOD WEBS

This picture shows a food web. Remember that a food web is made up of separate food chains.



FOOD CHAIN ACTIVITY

Make your own food chain using plants and animals that have the Ohio River as their habitat. Choose from some of the animals listed on this page.

fish

ducks

snakes

insects

turtles

crayfish

muskrat

man

WATER CYCLE

Water is all around us. It covers over 70% of the earth's surface, exists underground, and is present in the air surrounding the earth.

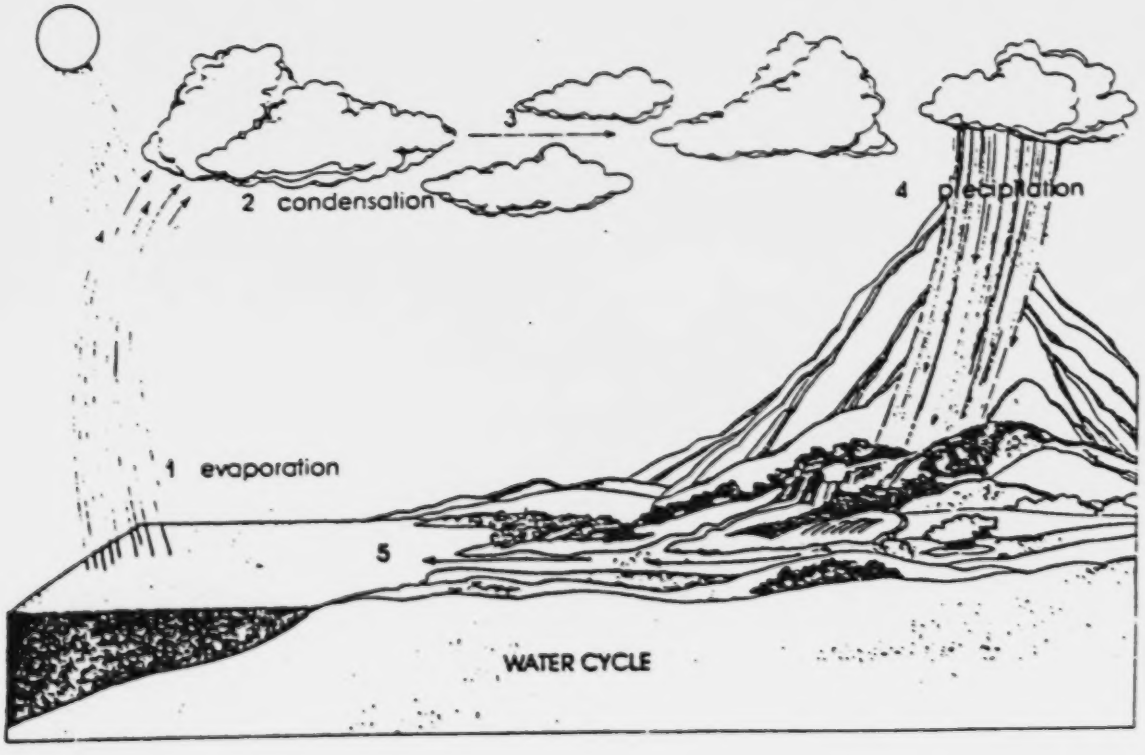
Water is important to all forms of life--plant, animal, and human. No form of life can live without water.

Water helps to determine climate, weather rock, form soil, and make other natural resources useable.

The amount of water on the earth remains the same. However, all water on earth is moving and changing. Each change is part of a large cycle called the water cycle. The water we drink may have been sleet or snow. It could later be stored in a lake or pond. Water has always been in a cycle and will continue to change over and over again.

The water cycle includes the changes from a solid to a liquid, to a gas--in any order. The sun helps the water evaporate. Water turns into water vapor and escapes into the air. Next the water vapor rises to higher altitudes where it cools and condenses into water droplets. These droplets join to form clouds. Sometime later the water droplets fall back to the earth's surface as some form of precipitation.

This drawing shows the water cycle. (1) Energy from the sun changes water to water vapor. (2) Water vapor rises, cools, and condenses to form clouds. (3) Winds move the clouds above the land. (4) Clouds meet cool air, and some form of precipitation occurs. (5) Much of the water returns to the oceans. Now the cycle is ready to begin again.



WORD LIST FOR WATER CYCLE

evaporation--the change from a liquid to a gas

condensation--the change from a gas (water vapor) to a liquid (water)

water cycle--the changing and moving of water (evaporation, condensation, precipitation, storage) that happens over and over again.

precipitation--water which falls to the found from clouds; rain and snow are two kinds of precipitation

WATER CYCLE REVIEW

1. Water that falls to the earth is called _____

2. When water goes into the air, we say the water _____

3. The system of evaporation and condensation of water is called the _____ _____

4. When water vapor changes to a liquid we call that _____

5. No form of life can live without _____

LET'S MAKE RAIN

We can make rain. It won't be like the rain that falls over the Earth but the idea is similar. Precipitation doesn't really begin above the Earth. It actually begins much lower down.

Get two large jars that are the same size and shape. Put water in one jar (about 1/4 inch deep). Fasten the second jar on the top with tape.

Place the jars on a windowsill where there will be sunlight. Watch the jars for a day or two. Write down what happened to the jars.